SOUTHERN PINE HEADERS & BEAMS

**Size Selection and Allowable Load Tables for
Southern Pine Lumber and Glued Laminated Timber**

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Foreword

For more than 300 years, Southern Pine headers and beams have framed millions of windows and doors, and supported just as many floor joist systems. This one-of-a-kind publication provides an easy method for selecting the proper Southern Pine header or beam for its intended application.

This brochure provides *Size Selection* and *Allowable Load Tables* for Southern Pine lumber and glued laminated timber (glulam) headers and beams. These tables will aid architects, engineers, contractors and other professionals engaged in designing and building residential and commercial structures in selecting the proper size of header or beam for the job.

The Southern Pine lumber reference design values used in developing the tables in this brochure are from *SPIB Standard Grading Rules for Southern Pine Lumber, 2002 Edition*, published by the Southern Pine Inspection Bureau (SPIB). The glued laminated timber design values are from *AITC 117-04, Standard Specifications for Structural Glued Laminated Timber of Softwood Species*, published by the American Institute of Timber Construction (AITC), and *Glulam Design Properties and Layup Combinations* published by APA -The Engineered Wood Association. The design values have been adjusted according to the *2005 National Design Specification® for Wood Construction (NDS®)*, published by the American Wood Council (AWC). Beam sizes or allowable load capacities have been determined using standard engineering formulas for beams supporting uniformly distributed loads. Values tabulated represent the most limiting of four design parameters – bending (flexure), deflection, compression perpendicular-to-grain and shear parallel-to-grain (horizontal shear).

These tables are ideal for professionals who will apply the required technical knowledge. For the *Size Selection Tables*, the user must determine the required load conditions, clear opening, and span of the trusses or other members framing into the header or beam. For the *Allowable Load Tables*, the user must determine the load in pounds per lineal foot (plf) the header or beam is required to carry.

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SFPA is a nonprofit trade association
that has represented manufacturers of
Southern Pine lumber since 1915.

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Contents

Building with Wood

Throughout history, wood has found favor as a building material due to its strength, economy, workability, beauty and durability. Wood-frame buildings are economical to build, heat and cool, and provide maximum comfort to occupants. Wood construction is readily adaptable to traditional, contemporary and the most cutting-edge building styles. Its architectural possibilities are limitless and its durability spans the centuries.

Wood building materials are good for the environment, too. Wood is a renewable, sustainable resource that is manufactured in energy-efficient processes that optimize use of renewable energy sources. In fact, in a comparison of fossil fuel consumption associated with the materials for three floor systems – wood, concrete and steel – the wood joist floor required the least amount of fossil fuel energy.

CONSUMPTION OF FOSSIL FUELS (MJ/FT²) ASSOCIATED WITH THREE FLOOR DESIGNS
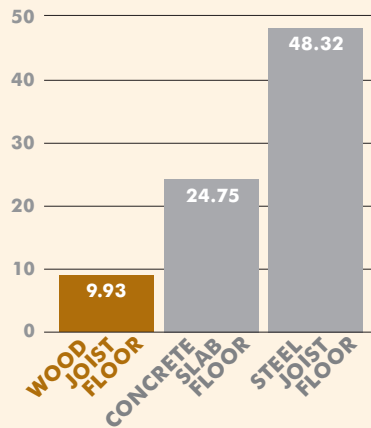
Note:
One megajoule (MJ) is equivalent to 0.27778 kilowatt hours or 947.8 BTUs.

Source: Consortium for Research on Renewable Industrial Materials (CORRIM)

Index to Size Selection Tables

Table Number	Grade	Live or Ground Snow Load (psf)	Dead Load (psf)	Load Duration Factor, C_D	See Page
Window, Door & Garage Door Headers – Supporting Roof Loads Only					
1	All	30	10	1.15	8
2	All	40	10	1.15	9
3	All	50	10	1.15	9
4	All	70	10	1.15	10
5	All	20	10	1.25	10
6	All	20	20	1.25	11
Window, Door & Garage Door Headers – Supporting Roof, Wall & Floor Loads					
7	All	30	10	1.15	12
8	All	40	10	1.15	13
9	All	50	10	1.15	13
10	All	70	10	1.15	14
11	All	20	10	1.25	14
12	All	20	20	1.25	15
Floor Girder Beams					
13	All	40	10	1.00	16
Floor Edge Beams					
14	All	40	10	1.00	18
Roof Ridge Beams					
15	All	30	10	1.15	19
16	All	40	10	1.15	20
17	All	50	10	1.15	20
18	All	70	10	1.15	21
19	All	20	10	1.25	21
20	All	20	20	1.25	22

Index to Allowable Load Tables

Table Number	Grade	Total Load Deflection Limit	Live Load Deflection Limit	Load Duration Factor, C_D	See Page
Allowable Floor Loads (plf)					
21	No.1	240	360	1.00	24
22	No.2	240	360	1.00	25
23	No.3	240	360	1.00	25
24	Glulam	240	360	1.00	26
Allowable Roof Loads (plf)					
25	No.1	240	360	1.15	27
26	No.2	240	360	1.15	28
27	No.3	240	360	1.15	28
28	Glulam	240	360	1.15	29
29	No.1	240	360	1.25	30
30	No.2	240	360	1.25	31
31	No.3	240	360	1.25	31
32	Glulam	240	360	1.25	32

Assumptions for Table Development

The *Size Selection* and *Allowable Load Tables* in this brochure have been developed for Southern Pine lumber and glued laminated timber. Southern Pine lumber sizes for No.1, No.2, and No.3 grades are provided with the number of pieces (plies) required shown in parentheses (e.g. (3) 2x10s). Southern Pine glued laminated timber sizes for a 24F-1.8E stress class are provided only when (4) 2x12s no longer meet design parameters.

Glued Laminated Timber

In general, glued laminated timber headers and beams are stock items that can be purchased from a local building material supplier. Glued laminated timber is available in a variety of standard widths and depths, strength combinations, unbalanced or balanced beam layups, cambered or non-cambered beams, four different appearance grades, and stock or custom members.

For the purpose of this publication, actual widths of 3-1/2" and 5-1/2", plus depths based on actual 1-3/8"-thick laminations have been used. These sizes are typical for stock Southern Pine Framing Appearance Grade glued laminated timber headers and beams used in applications where appearance is not critical.

Common glued laminated timber combinations use an unbalanced layup of laminating lumber grades. This means there is a distinct top and bottom to the glued laminated header or beam. All unbalanced glued laminated timber stock beams are required to have a "TOP" mark, and must only be used in simple-span applications with the "TOP" mark facing up. A significant strength reduction occurs if an unbalanced glued laminated timber is installed upside down, or in a continuous span across supports. An appropriate balanced beam combination may be used for either simple-span or continuous-span applications.

One advantage of glued laminated timber is that camber (i.e. upward curvature) can be built into the member to compensate for deflection due to the weight of the structure, and to maintain a straight architectural line. Most stock glued laminated timber is manufactured with camber, but some stock members – especially balanced layup combinations – are manufactured without camber.

For more information about glued laminated timber, contact the American Institute of Timber Construction (AITC) at *www.aitc-glulam.org*, or APA – The Engineered Wood Association at *www.apawood.org*.

General Requirements

These tables only apply to Southern Pine lumber and glued laminated timber used under ordinary ranges of temperature and dry service conditions. The moisture content in use must be a maximum of 19% for lumber, and less than 16% for glued laminated timber.

The quality and design of load-supporting wood members and connections must conform to the *National Design Specification (NDS)*. All structural members must be framed, anchored, tied, and braced to achieve the required strength and rigidity. Adequate bracing and bridging to resist wind and other lateral forces must be provided.

Loading Conditions

Assumed loading conditions are clearly stated in the heading for each *Size Selection* table. The range of loads provided accommodates the most common design loads used in the United States, but only gravity loads (i.e. live loads, ground snow loads and dead loads) were considered. Wind and seismic analysis are outside the scope of this publication. Roof live load reductions have not been taken in developing these tables.

The headers and beams in the snow load *Size Selection Tables* (Tables 1-4, 7-10 and 15-18) have been sized using the Design Roof Snow Load shown in the subheading for each table. The Design Roof Snow Load has been derived by reducing the Ground Snow Load listed in each table heading in accordance with the provisions of Section 7.3 in *ASCE 7-10, Minimum Design Loads* for Buildings and Other Structures. This reduction results in an equivalent balanced Design

Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot), when using the following factors:
- *Exposure Factor, C_e = 1.0*
- *Thermal Factor, C_t = 1.0*
- *Importance Factor, I_s = 1.0*

These tables do not consider unbalanced snow loads, drifting or rain-on-snow surcharges that may be required by the building code.

Sizes

The Southern Pine lumber headers and beams have been determined using net lumber dimensions (actual sizes), provided by the *American Softwood Lumber Standard PS 20* as follows:

Nominal Size (in.)	Actual Size (in.)
2 x 6	1-1/2 x 5-1/2
2 x 8	1-1/2 x 7-1/4
2 x 10	1-1/2 x 9-1/4
2 x 12	1-1/2 x 11-1/4

The Southern Pine glued laminated timber headers and beams also have been based on actual widths of 3-1/2" or 5-1/2", and depths based on actual 1-3/8"-thick laminations. Actual glued laminated timber widths of 3" or 3-1/8" and 5" or 5-1/8" are also available in the marketplace. The glued laminated timber *Allowable Load Tables* in this publication may also apply to such additional width options if the adjustment method explained in the footnotes to Tables 24, 28 and 32 is followed.

Spans

The headers and beams provided in these tables have been computed using Allowable Stress Design and standard engineering design equations for simple span beams with uniformly distributed gravity loads. Uplift loads caused by wind have not been considered, nor have concentrated loads.

Values in these tables have been limited to the minimum number calculated for the following four design parameters:
- *Bending (flexure)*
- *Deflection*
- *Compression perpendicular-to-grain*
- *Shear parallel-to-grain (horizontal shear)*

Reference Design Values

The following table lists reference design values in pounds per square inch (psi) for Southern Pine glued laminated timber and lumber grades included in this publication. The glued laminated timber values are from *AITC 117* and *APA EWS Y117* for the 24F-1.8E

stress class. The Southern Pine lumber values are from the *SPIB Grading Rules*.

Southern Pine Glued Laminated Timber and Lumber Reference Design Values					
Property	Glued Laminated Timber	Lumber Size	No.1	No. 2	No. 3
F_b	2400	2 x 6	1650	1250	750
		2 x 8	1500	1200	700
		2 x 10	1300	1050	600
		2 x 12	1250	975	575
E	1,800,000	All	1,700,000	1,600,000	1,400,000
$F_{c\perp}$	740	All	565	565	565
F_v	300	All	175	175	175

Adjustment Factors

Reference design values must be multiplied by all applicable adjustment factors to determine adjusted design values. The adjustment factors used to develop these tables are described below. Note that reference design values have not been adjusted for buckling. To use these tables, therefore, the compression edge of the header or beam must be laterally supported at intervals of 24" or less. In addition, lateral support must be provided at bearing points.

For more complete information on reference design values and adjustment factors, refer to the *NDS*.

Load Duration Factor, C_D – Wood has the ability to carry substantially greater maximum loads for short durations than for long durations. The following load duration factors have been used to adjust the reference design values for bending and shear.

Load Duration	C_D
Ten years (occupancy live load)	1.00
Two months (snow load)	1.15
Seven days (construction load)	1.25

Repetitive Member Factor, C_r – The repetitive member factor applies to three or more like bending members in contact and properly connected together for load sharing.

Volume Effect Factor, C_V – The volume effect factor equation for Southern Pine glued laminated timber bending members is:

$C_V = (5.125/b)^{1/20}(12/d)^{1/20}(21/L)^{1/20} \leq 1.0$, where:
b = width of bending member in inches
d = depth of bending member in inches
L = length of bending member between
    points of zero moment in feet

Bending

Reference design values for bending have been adjusted with the load duration factor shown for each table. For the three- and four-ply lumber members, reference design values for bending have been multiplied by the repetitive member factor, $C_r = 1.15$. For glued laminated timber, reference design values for bending have been multiplied by the volume effect factor, C_V.

Deflection

Deflection may be the controlling factor in determining the member size required when appearance or rigidity is important. Deflection limits are expressed as a fraction of the span length (ℓ) in inches. Building codes have traditionally required certain deflection limits for floor and roof members, but designers must also evaluate other deflection criteria, such as long-term deflection under sustained loads (including creep) and serviceability issues (including vibration). Some structural members, such as headers for wide garage doors, may require more stringent deflection limits. The following deflection limits have been used in the development of the tables in this publication:

Tables	Total Load	Live Load
1-12: Headers	ℓ/240	ℓ/360
13-14: Floor Beams	ℓ/240	ℓ/360
15-20: Roof Beams	ℓ/180	ℓ/240
21-32: Allowable Loads	ℓ/240	ℓ/360

For live-load deflection limits other than ℓ/360, the *Allowable Load Tables* (Tables 21-32) may be used to calculate the allowable live load. Multiply the live-load (LL) value by the ratio of 360 divided by the desired deflection constant. For example, to determine the allowable live load for a deflection limit of ℓ/480, multiply the tabulated LL value by the ratio of 360/480 = 0.75. The result must not exceed the corresponding total-load (TL) value for the same clear opening and product.

Compression Perpendicular-to-Grain

The required bearing lengths for headers and beams in both the *Size Selection* and *Allowable Load Tables* have been based on the compression perpendicular-to-grain design value for the product indicated. The *Size Selection Tables* require a minimum 3.0" bearing length, with the products marked with an asterisk (*) requiring a 4.5" bearing length.

For the *Allowable Load Tables*, the required bearing lengths have been used to determine the design span, which is defined as the distance from inside face to inside face of supports (i.e. the clear opening) plus one-half the required bearing length at each end. The required bearing lengths have been converted into the minimum number of 1.5"-wide members needed to support the header or beam. Nominal 2"-thick vertical lumber trimmers or shoulder studs are most often used for this application. The 1.5" trimmers are assumed to provide full support across the width of the header or beam. Column buckling has not been considered and may need to be checked depending on the grade, species and height of the trimmers. If bearing occurs on a wall plate, check for compression perpendicular-to-grain for the species and grade of that plate.

Shear Parallel-to-Grain

In accordance with *NDS* provisions, all loads within a distance from supports equal to the depth of the members have been ignored when calculating the design shear force.

Identification

The tables in this brochure apply to properly identified material. Lumber must be identified by the grade mark of an agency certified by the Board of Review of the American Lumber Standard Committee, and manufactured in accordance with *Product Standard PS 20* published by the U.S. Department of Commerce. A certified grade mark on Southern Pine dimension lumber indicates that the lumber has been properly seasoned by the manufacturer, and that it meets the structural and appearance requirements established for the grade.

Glued laminated timber must be identified with a quality mark or trademark indicating conformance with *ANSI/AITC A190.1, American National Standard for Wood Products – Structural Glued Laminated Timber.* These marks indicate the manufacturer is committed to a rigorous program of quality testing and product verification.

Typical Lumber Grade Marks:
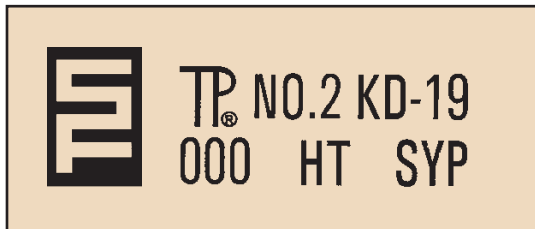
Typical Glued Laminated Timber Marks:
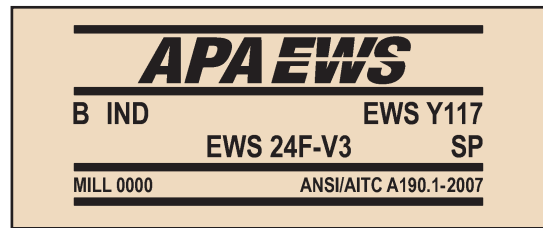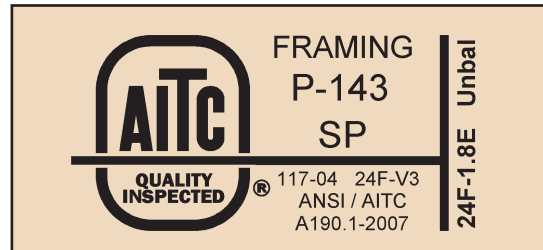
Fabricating Multiple-Member Headers and Beams

Headers and beams can be built-up with multiple pieces (plies) of nominal 2"-thick lumber nailed together with the wide faces positioned vertically. According to AWC's *Details for Conventional Wood Frame Construction*, multiple plies should be nailed together with two rows of 20d nails – one row near the top edge of the header or beam, and the other near the bottom edge. Nails in each row are spaced 32 inches apart.

End joints of the nailed lumber should occur over the supporting column or pier. Beams and girders that are not continuous should be tied together across supports. This is most often accomplished by nailing a steel strap or tie to both beams, but other methods are acceptable.

A nominal 1/2" (15/32") wood structural panel filler is often used to fill out two plies of a nominal 2"-thick lumber header to match a 3-1/2" wall width.
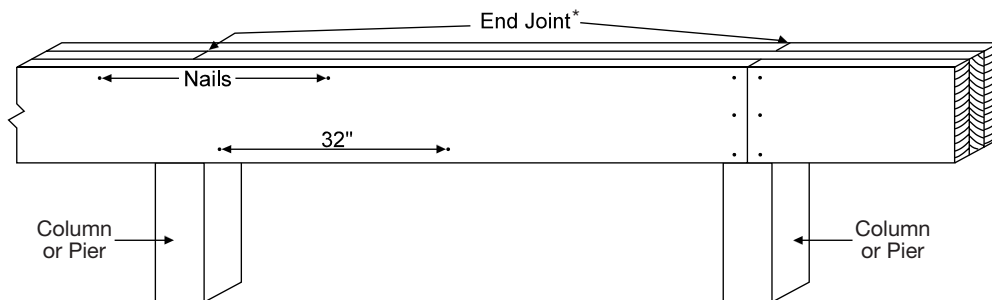
*Beam continuity is maintained by staggering end joints of adjacent plies.

Typical Header and Beam Connections

Beam to Masonry or Concrete Wall
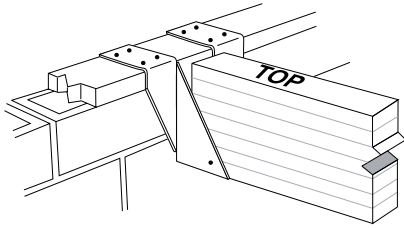
Note: Maintain 1/2" air space around the end of the wood beam.

Beam to Column
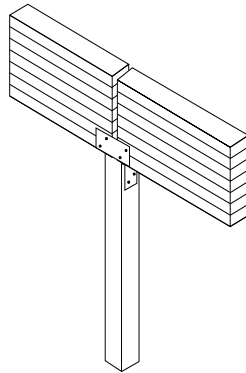
Beam to Beam
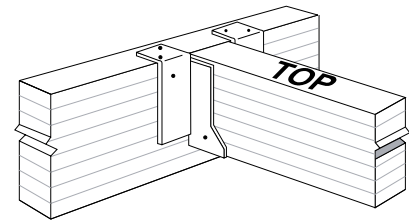
Header to Frame
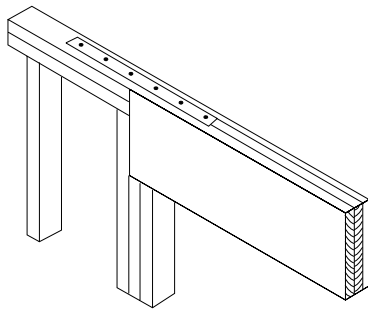
Braced Wall Detail for Garage Door Header
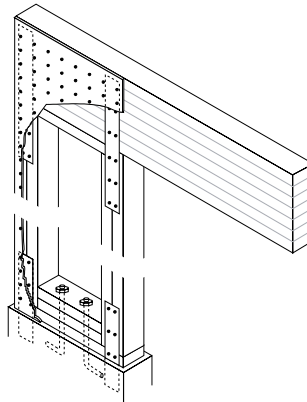
Header to Header
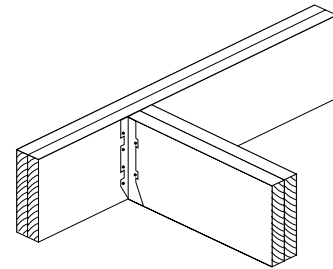
Beam to Concrete Wall Pocket
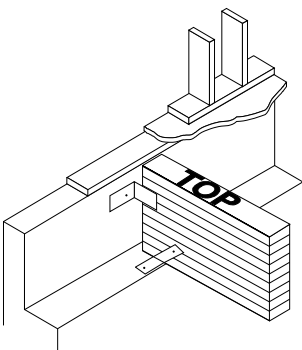
Note: Note: Maintain ½" air space between the end of the wood beam and the concrete wall. A moisture barrier is required between the bottom of the beam and the concrete wall.
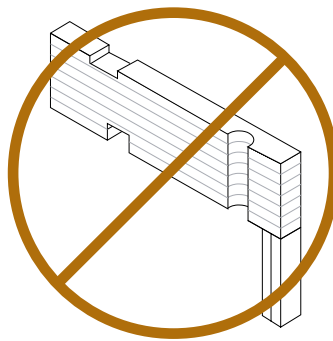
Caution: Do not cut, drill or notch headers or beams.

Beam Bearing on Trimmers Inside Wall Framing
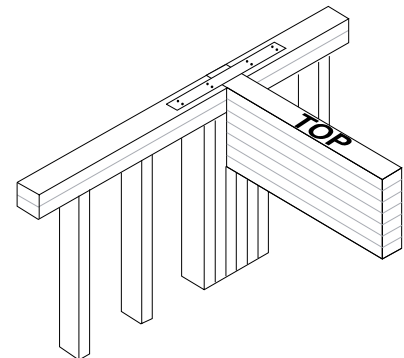
Note: Follow code requirements for nailing schedules, allowable loads, proper straps and proper bearing conditions. Details shown apply to both lumber or glued laminated timber headers and beams.

SOUTHERN PINE SIZE SELECTION TABLES

Requirements for Use of Size Selection Tables

1. These tables are for gravity loads only. Consult a registered design professional for wind and seismic load analysis and design.

2. All tables are based on uniformly distributed loads only. Other loads, such as concentrated or unbalanced snow loads, have not been considered and must be analyzed separately.

3. These tables are only applicable to members used under dry-service conditions where the moisture content in use is a maximum of 19% for lumber and less than 16% for glued laminated timber.

4. The compression edge of the header or beam must be laterally supported at intervals of 24" or less. In addition, lateral support must be provided at bearing points.

5. Design loads used to select a header or beam must be equal to or greater than the actual applied loads.

6. Multiple-member headers and beams must be properly connected together. See page 5 for connection guidelines.

7. Unbalanced glued laminated timber combinations must be used in simple-span applications only. Balanced beam combinations with equal or greater design values may be substituted and used in either simple-span or continuous-span applications.

8. These tables are only applicable to members used under ordinary ranges of temperature and occasionally heated in use up to 150° F.

Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed. For other bearing lengths, use the appropriate *Allowable Roof Load Table* (Tables 25-32).

Steps for Using Tables 1-6:

1. Select the table with loading conditions and load duration factor satisfying the intended application.
2. Find the span of supported roof framing (i.e. span of trusses or rafters that frame into the header) that equals or exceeds the intended application.
3. Find the clear opening that equals or exceeds the intended application.
4. Select product size for the appropriate grade, clear opening and span of supported roof framing.

Header size is based on the load transferred from 1/2 the span of the supported roof framing, plus a 24" overhang.

Grade	Clear Opening	Span of Supported Roof Framing						
		16'	**20'**	**24'**	**28'**	**32'**	**36'**	**40'**
No. 1	4'	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8
	6'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12
	8'	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s
	9'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	10'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	12'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	16'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	18'	(3) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*
No. 2	4'	(1) 2 x 6	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10
	6'	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s
	8'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	9'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 10s
	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	16'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	18'	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*
No. 3	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12
	6'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	12'	(3) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*
	16'	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	18'	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*

Table 1 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 21 psf Design Roof Snow Load

(See *Requirements for Use* on page 7, *Key* and *Notes* on this page, and *Example* on page 11)

Notes for Tables 1 - 6: Window, Door & Garage Door Headers – Supporting Roof Loads Only

- Tables 1-6 apply to headers carrying only uniformly distributed roof loads. For headers supporting uniformly distributed floor, roof and exterior wall loads, use the appropriate table for *Window, Door & Garage Door Headers – Supporting Roof, Wall & Floor Loads* (Tables 7-12).
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Header size is based on the load transferred from 1/2 the span of the supported roof framing, plus a 24" overhang.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load.
- Design Roof Snow Loads have been derived by reducing Ground Snow Loads in accordance with *ASCE 7-10*, Section 7.3. This results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot). Unbalanced snow loads, drifting or rain-on-snow surcharges have not been considered. Roof live load reductions have not been taken.
- For loading conditions other than those provided in Tables 1-6, use another table in this section with higher loading conditions than required, or use the *Allowable Roof Load Table* with the corresponding load duration factor (Tables 25-32). For clear openings other than those provided, use the next larger clear opening shown, or use the appropriate *Allowable Roof Load Table*.
- All (1) ply lumber headers may be replaced with (2) 2x8s of the same or better grade.
- All 3-1/2"-wide glued laminated timbers may be replaced with a shallower 5-1/2"-wide glued laminated timber with equal or greater load capacity; refer to the appropriate *Allowable Roof Load Table* (Tables 28 or 32) to determine the proper beam depth.

Table 2 – 40 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 28 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 6	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8
	6'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s
	8'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	9'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	16'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 15-1/8
	18'	(4) 2 x 12s	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 17-7/8
No. 2	4'	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10
	6'	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s
	8'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	9'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8
	16'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 15-1/8
	18'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 17-7/8
No. 3	4'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	12'	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8
	16'	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 15-1/8
	18'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 17-7/8

Table 3 – 50 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 35 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10
	6'	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s
	8'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	9'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	10'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8
	16'	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8
	18'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2
No. 2	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12
	6'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	16'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8
	18'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2
No. 3	4'	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	8'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4
	9'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	10'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11
	12'	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	16'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8
	18'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2

(See *Requirements for Use* on page 7, *Key* and *Notes* on page 8, and *Example* on page 11)

Table 4 – 70 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 49 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(2) 2 x 8s
	6'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8
	16'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	18'	3-1/2 x 16-1/2	3-1/2 x 17-7/8	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8
No. 2	4'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s
	6'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11
	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	12'	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8
	16'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	18'	3-1/2 x 16-1/2	3-1/2 x 17-7/8	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8
No. 3	4'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	6'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	8'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	9'	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11
	10'	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	12'	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8
	16'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	18'	3-1/2 x 16-1/2	3-1/2 x 17-7/8	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8

Table 5 – 20 psf Live Load, 10 psf Dead Load, 1.25 Load Duration Factor

Grade	Clear Opening	Span of Supported Roof Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8
	6'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12
	8'	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s
	9'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	10'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	12'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	16'	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	18'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 15-1/8
No. 2	4'	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8
	6'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s
	8'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	9'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	16'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	18'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 15-1/8
No. 3	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12
	6'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11
	16'	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	18'	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 15-1/8

(See *Requirements for Use* on page 7, *Key* and *Notes* on page 8, and *Example* on page 11)

Table 6 – 20 psf Live Load, 20 psf Dead Load, 1.25 Load Duration Factor

Grade	Clear Opening	Span of Supported Roof Framing						
		16'	**20'**	**24'**	**28'**	**32'**	**36'**	**40'**
No. 1	4'	(1) 2 x 6	(1) 2 x 6	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8
	6'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s
	8'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	9'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	16'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	18'	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*
No. 2	4'	(1) 2 x 6	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10
	6'	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s
	8'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	9'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	10'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*
	16'	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	18'	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*
No. 3	4'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*
	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	12'	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*
	16'	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	18'	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*

(See *Requirements for Use* on page 7, *Key* and *Notes* on page 8, and *Example* on this page)

EXAMPLE: Garage Door Header – Supporting Roof Loads Only
(See Table 6 above)

Live Load = 20 psf

Dead Load = 20 psf

Load Duration Factor = 1.25

Span of Supported Roof Framing = 20'

Clear Opening = 16'

Southern Pine Header Selected: No.1 Southern Pine Lumber - (4) 2x12s or
(from Table 6)   24F-1.8E Southern Pine Glulam - 3-1/2" x 12-3/8"
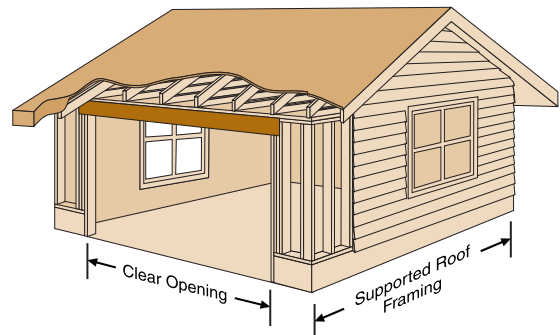
Header size is based on the load transferred from 1/2 the span of the supported roof framing, plus a 24" overhang.

Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed, except for the sizes marked with an asterisk (*) which require a 4.5" bearing length. For other bearing lengths, use the *Allowable Floor Load* tables (Tables 21-24).

Steps for Using Tables 7-12:

1. Select the table with loading conditions and load duration factor satisfying the intended application.
2. Find the span of supported roof and floor framing that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported roof and floor framing.

← Supported Roof and Floor Framing →   *Clear Opening*
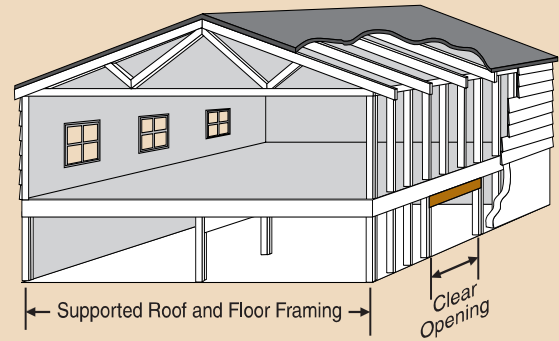
Header size is based on the load transferred from 1/2 the span of the supported roof framing plus a 24" overhang, plus 1/4 the span of the floor framing, plus the wall load.

Table 7 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 21 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof & Floor Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(2) 2 x 8s
	6'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 11*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*
No. 2	4'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s
	6'	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*
	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*
	12'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 11*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*
No. 3	4'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s
	6'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	8'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*	*3-1/2 x 8-1/4*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	9'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*
	10'	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*
	12'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 11*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*

(See *Requirements for Use* on page 7, *Key* and *Notes* on this page, and *Example* on page 15)

Notes for Tables 7 - 12: Window, Door & Garage Door Headers – Supporting Roof, Wall & Floor Loads

- Tables 7-12 apply to headers carrying only uniformly distributed roof, wall and floor loads.
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Header size is based on the load transferred from 1/2 the span of the supported roof framing plus a 24" overhang, plus 1/4 the span of the floor framing, plus the wall load. The floor load is assumed to be 40 psf live load and 10 psf dead load. The wall load is assumed to be 100 plf (pounds per lineal foot) dead load.
- Deflection is limited to ℓ/240 for total load and ℓ/360 for live load.
- Design Roof Snow Loads have been derived by reducing Ground Snow Loads in accordance with *ASCE 7-10*, Section 7.3. This results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot). Unbalanced snow loads, drifting or rain-on-snow surcharges have not been considered. Roof live load reductions have not been taken.
- For loading conditions other than those provided in Tables 7-12, use another table in this section with higher loading conditions than required, or use the *Allowable Floor Load Tables* (Tables 21-24). For clear openings other than those provided, use the next larger clear opening shown, or use the *Allowable Floor Load Tables*.
- All (1) ply lumber headers may be replaced with (2) 2x8s of the same or better grade.
- All 3-1/2"-wide glued laminated timbers may be replaced with a shallower 5-1/2"-wide glued laminated timber with equal or greater load capacity; refer to the appropriate *Allowable Floor Load Table* (Table 24) to determine the proper beam depth.

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Table 8 – 40 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 28 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof & Floor Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 8s
	6'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8
	12'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	18'	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*
No. 2	4'	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 11
	10'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	12'	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	18'	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*
No. 3	4'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	6'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	8'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	9'	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11
	10'	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	12'	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	18'	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*

Table 9 – 50 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 35 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof & Floor Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(2) 2 x 8s	(2) 2 x 8s	(2) 2 x 8s
	6'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	8'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	5-1/2 x 11
	12'	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2*
	18'	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*
No. 2	4'	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	8'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8
	10'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	5-1/2 x 11
	12'	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2*
	18'	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*
No. 3	4'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	6'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	8'	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11
	9'	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8
	10'	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	5-1/2 x 11
	12'	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2*
	18'	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*

(See *Requirements for Use* on page 7, *Key* (*) and *Notes* on page 12, and *Example* on page 15)

Table 10 – 70 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 49 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof & Floor Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 10	(1) 2 x 10	(2) 2 x 8s	(2) 2 x 8s	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*5-1/2 x 11*	*5-1/2 x 11*
	10'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*5-1/2 x 11*	*5-1/2 x 11*	*5-1/2 x 11*
	12'	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 12-3/8*	*5-1/2 x 12-3/8*	*5-1/2 x 13-3/4*	*5-1/2 x 13-3/4*
	16'	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2**	*5-1/2 x 17-7/8**	*5-1/2 x 17-7/8**
	18'	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 17-7/8*	*5-1/2 x 17-7/8**	*5-1/2 x 19-1/4**	*5-1/2 x 19-1/4**	*5-1/2 x 20-5/8**
No. 2	4'	(1) 2 x 10	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s
	6'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	8'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*5-1/2 x 11*
	9'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*5-1/2 x 11*	*5-1/2 x 11*
	10'	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*5-1/2 x 11*	*5-1/2 x 11*	*5-1/2 x 11*
	12'	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 12-3/8*	*5-1/2 x 12-3/8*	*5-1/2 x 13-3/4*	*5-1/2 x 13-3/4*
	16'	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2**	*5-1/2 x 17-7/8**	*5-1/2 x 17-7/8**
	18'	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 17-7/8*	*5-1/2 x 17-7/8**	*5-1/2 x 19-1/4**	*5-1/2 x 19-1/4**	*5-1/2 x 20-5/8**
No. 3	4'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	6'	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*	*3-1/2 x 9-5/8*
	8'	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*5-1/2 x 11*
	9'	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*5-1/2 x 11*	*5-1/2 x 11*
	10'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*5-1/2 x 11*	*5-1/2 x 11*	*5-1/2 x 11*
	12'	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 12-3/8*	*5-1/2 x 12-3/8*	*5-1/2 x 13-3/4*	*5-1/2 x 13-3/4*
	16'	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2**	*5-1/2 x 17-7/8**	*5-1/2 x 17-7/8**
	18'	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 17-7/8*	*5-1/2 x 17-7/8**	*5-1/2 x 19-1/4**	*5-1/2 x 19-1/4**	*5-1/2 x 20-5/8**

Table 11 – 20 psf Live Load, 10 psf Dead Load, 1.25 Load Duration Factor

Grade	Clear Opening	Span of Supported Roof & Floor Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 10	(2) 2 x 8s
	6'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s
	8'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	9'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*
No. 2	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(1) 2 x 12	(2) 2 x 8s
	6'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*
	12'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*
No. 3	4'	(1) 2 x 12	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s
	6'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	8'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*	*3-1/2 x 8-1/4*	*3-1/2 x 9-5/8*
	9'	(3) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	10'	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*
	12'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*

(See *Requirements for Use* on page 7, *Key* (*) and *Notes* on page 12, and *Example* on page 15)

Table 12 – 20 psf Live Load, 20 psf Dead Load, 1.25 Load Duration Factor

Grade	Clear Opening	Span of Supported Roof & Floor Framing						
		16'	20'	24'	28'	32'	36'	40'
No. 1	4'	(1) 2 x 8	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(2) 2 x 8s	(2) 2 x 8s	(2) 2 x 8s
	6'	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	8'	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	9'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*
	12'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 12-3/8*	*5-1/2 x 12-3/8*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*
	18'	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*	*5-1/2 x 17-7/8**	*5-1/2 x 17-7/8**
No. 2	4'	(1) 2 x 8	(1) 2 x 10	(1) 2 x 10	(1) 2 x 12	(2) 2 x 8s	(2) 2 x 8s	(2) 2 x 10s
	6'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	8'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*
	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	12'	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 12-3/8*	*5-1/2 x 12-3/8*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*
	18'	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*	*5-1/2 x 17-7/8**	*5-1/2 x 17-7/8**
No. 3	4'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	6'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	8'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	9'	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*
	10'	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	12'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*5-1/2 x 12-3/8*	*5-1/2 x 12-3/8*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*	*5-1/2 x 13-3/4*	*5-1/2 x 15-1/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*
	18'	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*	*5-1/2 x 16-1/2*	*5-1/2 x 17-7/8**	*5-1/2 x 17-7/8**

(See *Requirements for Use* on page 7, *Key* (*) and *Notes* on page 12, and *Example* on this page)

EXAMPLE: Sliding Glass Door Header – Supporting Roof, Wall & Floor Loads
(See Table 8 on page 13)

Ground Snow Load** = 40 psf
(**Equivalent to a 28 psf Design Roof Snow Load)

Dead Load = 10 psf

Load Duration Factor = 1.15

Span of Supported Roof Framing = 20'

Clear Opening = 12'

Southern Pine Header Selected: No.1 Southern Pine Lumber - (4) 2x12s or
(from Table 8) 24F-1.8E Southern Pine Glulam - 3-1/2" x 11"
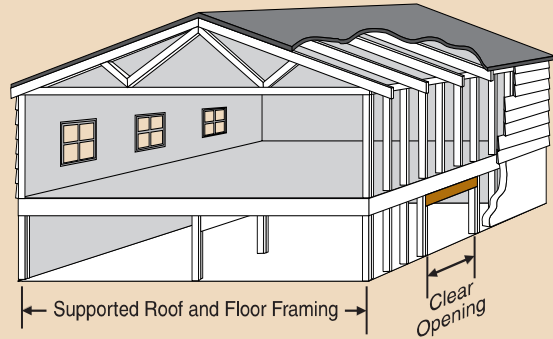
Header size is based on the load transferred from 1/2 the span of the supported roof framing plus a 24" overhang, plus 1/4 the span of the floor framing, plus the wall load.

← Supported Roof and Floor Framing → Clear Opening

Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed. For other bearing lengths, use the *Allowable Floor Load Tables* (Tables 21-24).

Steps in Using Table 13:

1. Verify the applicability of this table's loading conditions and load duration factor.
2. Find the span of supported floor framing (i.e., sum of the spans of the joists or trusses that frame into the beam) that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported floor framing.
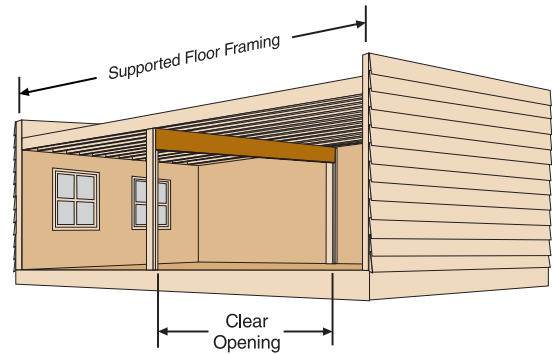
Beam size is based on the load transferred from 1/2 the span of the supported floor framing assuming two simple spans.

Table 13 – 40 psf Live Load, 10 psf Dead Load, 1.00 Load Duration Factor

Grade	Clear Opening	Span of Supported Floor Framing (Sum of joist spans from both sides of beam)						
		20'	24'	26'	28'	30'	32'	36'
No. 1	8'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	9'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	11'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*
	13'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	14'	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*
	15'	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
	17'	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*	*3-1/2 x 17-7/8*	*5-1/2 x 16-1/2*
No. 2	8'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	11'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*
	12	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	13'	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	14'	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*
	15'	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
	17'	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*	*3-1/2 x 17-7/8*	*5-1/2 x 16-1/2*
No. 3	8'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*
	9'	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	10'	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*
	11'	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*
	12'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	13'	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	14'	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*
	15'	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	16'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
	17'	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*
	18'	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*	*3-1/2 x 17-7/8*	*5-1/2 x 16-1/2*

(See *Requirements for Use* on page 7, *Key* on this page, and *Notes* and *Example* on page 17)

Notes for Table 13: Floor Girder Beams

- Table 13 applies to beams carrying only uniformly distributed floor loads from a single floor. For beams supporting additional uniformly distributed loads from a wall and upper floor, use the *Allowable Floor Load Tables* (Tables 21-24).
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Beam size is based on the load transferred from 1/2 the span of the supported floor framing assuming two simple spans.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load.
- For loading conditions other than those provided in Table 13, use the *Allowable Floor Load Tables* (Tables 21-24). For clear openings other than those provided, use the next larger clear opening shown, or use the *Allowable Floor Load Tables*.
- All 3-1/2"-wide glued laminated timbers may be replaced with a shallower 5-1/2"-wide glued laminated timber with equal or greater load capacity; refer to the appropriate *Allowable Floor Load Table* (Table 24) to determine the proper beam depth.

Example: Floor Girder Beam – Supporting Floor Loads from a Single Floor Only
(See Table 13 on page 16)

Live Load = 40 psf

Dead Load = 10 psf

Load Duration Factor = 1.00

Span of Supported Floor Framing = 11' + 13' = 24'

Clear Opening = 10'

Supported Floor Framing

Clear Opening

Beam size is based on the load transferred from 1/2 the span of the supported floor framing assuming two simple spans.

Southern Pine Beam Selected: No.1 Southern Pine Lumber - (3) 2x10s or
(from Table 13)   No.2 Southern Pine Lumber - (3) 2x12s or
24F-1.8E Southern Pine Glulam - 3-1/2" x 9-5/8"

(See Requirements for Use on page 7, Key on page 16, and Notes and Example on this page)
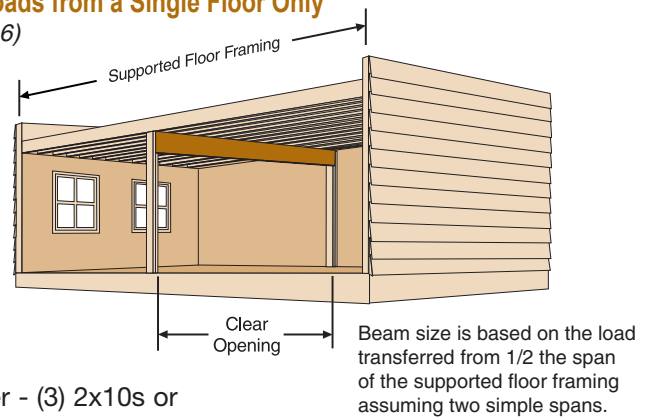
Floor Edge Beams

Notes for Table 14: Floor Edge Beams

- Table 14 applies to beams carrying only uniformly distributed floor loads from a single floor. For beams supporting additional uniformly distributed loads from a wall and upper floor, use the *Allowable Floor Load Tables* (Tables 21-24).
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Beam size is based on the load transferred from 1/2 the span of the supported floor framing.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load.
- For loading conditions other than those provided in Table 14, use the *Allowable Floor Load Tables* (Tables 21-24). For clear openings other than those provided, use the next larger clear opening shown, or use the *Allowable Floor Load Tables*.
- All (1) ply beams may be replaced with (2) 2x8s of the same or better grade.
- All 3-1/2"-wide glued laminated timbers may be replaced with a shallower 5-1/2"-wide glued laminated timber with equal or greater load capacity; refer to the appropriate *Allowable Floor Load Table* (Table 24) to determine the proper beam depth.

Clear Opening

Example: Floor Edge Beam – Supporting Floor Loads from a Single Floor Only
(See Table 14 on page 18)

Live Load = 40 psf

Dead Load = 10 psf

Load Duration Factor = 1.00

Span of Supported Floor Framing = 20'

Clear Opening = 12'

Supported Floor Framing

Beam size is based on the load transferred from 1/2 the span of the supported floor framing.

Southern Pine Beam Selected: No.1 Southern Pine Lumber - (3) 2x12s or
(from Table 14)   No.2 Southern Pine Lumber - (4) 2x12s or
24F-1.8E Southern Pine Glulam - 3-1/2" x 11"

(See Requirements for Use on page 7, Key on page 18, and Notes and Example on this page)
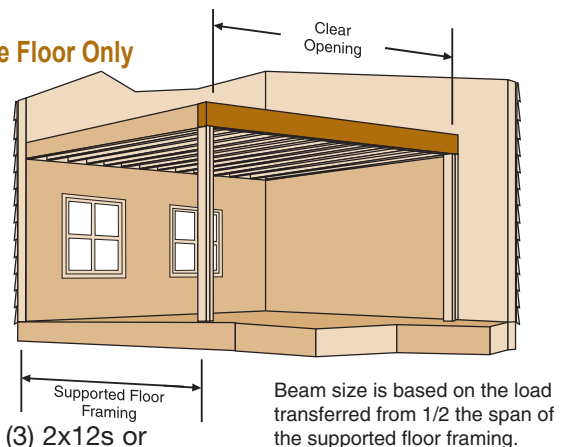
Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed. For other bearing lengths, use the *Allowable Floor Load Tables* (Tables 21-24).

Steps in Using Table 14:

1. Verify the applicability of this table's loading conditions and load duration factor.
2. Find the span of supported floor framing (i.e., span of joists or trusses that frame into the beam) that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported floor framing.

Beam size is based on the load transferred from 1/2 the span of the supported floor framing.
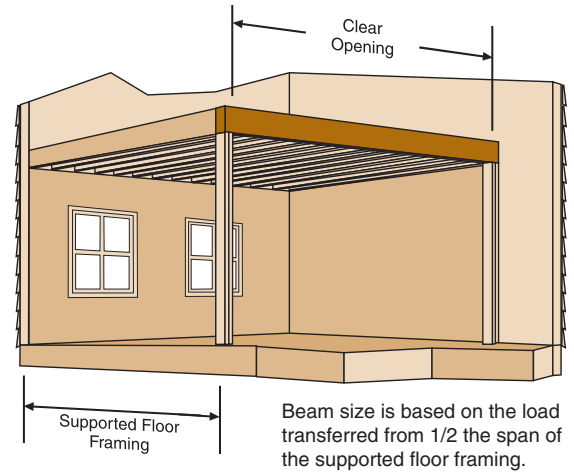
Table 14 – 40 psf Live Load, 10 psf Dead Load, 1.00 Load Duration Factor								
Grade	**Clear Opening**	**Span of Supported Floor Framing**						
		10'	**12'**	**14'**	**16'**	**18'**	**20'**	**22'**
No. 1	10'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	11'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	12'	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	13'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	14'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	15'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*
	16'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	17'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	18'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	19'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
	20	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*
No. 2	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	11'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	13'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*
	14'	(3) 2 x 10s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	15'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*
	16'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	17'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	18'	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	19'	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
	20'	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*
No. 3	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*
	11'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	12'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*
	13'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*
	14'	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	15'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*
	16'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*
	17'	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	18'	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*
	19'	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*
	20'	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*

(See *Requirements for Use* on page 7, *Key* on this page, and *Notes* and *Example* on page 17)

Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed, except for the sizes marked with an asterisk (*) which require a 4.5" bearing length. For other bearing lengths, use the appropriate *Allowable Roof Load Table* (Tables 25-32).

Steps in Using These Tables:

1. Select the table with loading conditions and load duration factor satisfying the intended application.
2. Find the span of supported roof framing (i.e., sum of the spans of the rafters or trusses that frame into the beam) that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported roof framing.
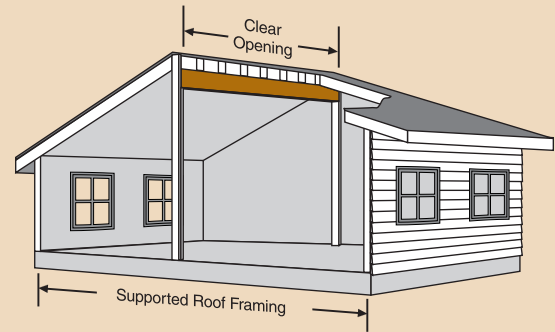
Beam size is based on the load transferred from 1/2 the span of the supported roof framing.

Table 15 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor								
**Equivalent to a 21 psf Design Roof Snow Load								
Grade	**Clear Opening**	**Span of Supported Roof Framing (sum of rafter spans from both sides of beam)**						
		16'	**20'**	**24'**	**28'**	**32'**	**36'**	**40'**
No. 1	10'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s
	12'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	14'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	16'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	18'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*
	20'	(3) 2 x 12s	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*
	22'	(4) 2 x 12s	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*
	24'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*
No. 2	10'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	12'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	14'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 11*
	16'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	18'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*
	20'	(4) 2 x 12s	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*
	22'	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*
	24'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*
No. 3	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*
	12'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	*3-1/2 x 8-1/4*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*
	14'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 11*
	16'	*3-1/2 x 9-5/8*	*3-1/2 x 9-5/8*	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*
	18'	*3-1/2 x 11*	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*
	20'	*3-1/2 x 11*	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*5-1/2 x 13-3/4*
	22'	*3-1/2 x 12-3/8*	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 16-1/2*	*5-1/2 x 15-1/8*
	24'	*3-1/2 x 13-3/4*	*3-1/2 x 15-1/8*	*3-1/2 x 15-1/8*	*3-1/2 x 16-1/2*	*3-1/2 x 17-7/8*	*5-1/2 x 15-1/8*	*5-1/2 x 16-1/2*

(See *Requirements for Use* on page 7, *Key* and *Notes* on this page, and *Example* on page 22)

Notes for Tables 15 - 20: Roof Ridge Beams

- Tables 15-20 apply to beams carrying only uniformly distributed roof loads.
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Beam size is based on the load transferred from 1/2 the span of the supported roof framing. Calculations assume the worst case of simple- or continuous-span glued laminated timber, but only simple-span Southern Pine lumber beams.
- Deflection is limited to $\ell/180$ for total load and $\ell/240$ for live load.
- Design Roof Snow Loads have been derived by reducing Ground Snow Loads in accordance with *ASCE 7-10*, Section 7.3. This results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot). Unbalanced snow loads, drifting or rain-on-snow surcharges have not been considered. Roof live load reductions have not been taken.
- For loading conditions other than those provided in Tables 15-20, use another table in this section with higher loading conditions than required, or use the *Allowable Roof Load Table* with the corresponding load duration factor (Tables 25-32). For clear openings other than those provided, use the next larger clear opening shown, or use the appropriate *Allowable Roof Load Table*.
- All (1) ply lumber headers may be replaced with (2) 2x8s of the same or better grade.
- All 3-1/2"-wide glued laminated timbers may be replaced with a shallower 5-1/2"-wide glued laminated timber with equal or greater load capacity; refer to the appropriate *Allowable Roof Load Tables* (Tables 28 or 32) to determine the proper beam depth.

Table 16 – 40 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 28 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof Framing (sum of rafter spans from both sides of beam)						
		16'	20'	24'	28'	32'	36'	40'
No. 1	10'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	12'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	14'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8
	16'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	18'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	20'	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	22'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 15-1/8
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 16-1/2
No. 2	10'	(2) 2 x 10s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11
	14'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	16'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	18'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	20'	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	22'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 15-1/8
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 16-1/2
No. 3	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8
	12'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11
	14'	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	16'	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	18'	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	20'	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	22'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 15-1/8
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 16-1/2

Table 17 – 50 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 35 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof Framing (sum of rafter spans from both sides of beam)						
		16'	20'	24'	28'	32'	36'	40'
No. 1	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	14'	(3) 2 x 10s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 11
	16'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	18'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 12-3/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	20'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8
	22'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 17-7/8*
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*
No. 2	10'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8
	14'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 11
	16'	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	18'	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 12-3/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	20'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8
	22'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 17-7/8*
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*
No. 3	10'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	12'	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8
	14'	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 11
	16'	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	18'	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 12-3/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	20'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8
	22'	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 17-7/8*
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*

(See *Requirements for Use* on page 7, *Key* (*) and *Notes* on page 19, and *Example* on page 22)

Table 18 – 70 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
**Equivalent to a 49 psf Design Roof Snow Load

Grade	Clear Opening	Span of Supported Roof Framing (sum of rafter spans from both sides of beam)						
		16'	20'	24'	28'	32'	36'	40'
No. 1	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	5-1/2 x 11	5-1/2 x 11
	14'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 11	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	18'	3-1/2 13-3/4	3-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 16-1/2*
	20'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2*	5-1/2 x 17-7/8*
	22'	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*	5-1/2 x 19-1/4*
	24'	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*	5-1/2 x 20-5/8*	5-1/2 x 22*
No. 2	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 11
	12'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	5-1/2 x 11	5-1/2 x 11
	14'	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 11	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	18'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 16-1/2*
	20'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2*	5-1/2 x 17-7/8*
	22'	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*	5-1/2 x 19-1/4*
	24'	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*	5-1/2 x 20-5/8*	5-1/2 x 22*
No. 3	10'	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11
	12'	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	5-1/2 x 11	5-1/2 x 11
	14'	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 11	5-1/2 x 12-3/8	5-1/2 x 12-3/8
	16'	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 12-3/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4
	18'	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 16-1/2*
	20'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2*	5-1/2 x 17-7/8*
	22'	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*	5-1/2 x 19-1/4*
	24'	3-1/2 x 17-7/8	5-1/2 x 16-1/2	5-1/2 x 17-7/8	5-1/2 x 17-7/8*	5-1/2 x 19-1/4*	5-1/2 x 20-5/8*	5-1/2 x 22*

Table 19 – 20 psf Live Load, 10 psf Dead Load, 1.25 Load Duration Factor

Grade	Clear Opening	Span of Supported Roof Framing (sum of rafter spans from both sides of beam)						
		16'	20'	24'	28'	32'	36'	40'
No. 1	10'	(1) 2 x 12	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s
	12'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	14'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	16'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8
	18'	(3) 2 x 10s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	20'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8
	22'	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8
	24'	(4) 2 x 12s	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2
No. 2	10'	(1) 2 x 12	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s
	12'	(2) 2 x 10s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	14'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11
	16'	(3) 2 x 10s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	18'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	20'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8
	22'	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8
	24'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2
No. 3	10'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8
	14'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11
	16'	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	18'	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4
	20'	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8
	22'	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	5-1/2 x 15-1/8
	24'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2

(See *Requirements for Use* on page 7, *Key* (*) and *Notes* on page 19, and *Example* on page 22)

Table 20 – 20 psf Live Load, 20 psf Dead Load, 1.25 Load Duration Factor

Grade	Clear Opening	Span of Supported Roof Framing (sum of rafter spans from both sides of beam)						
		16'	20'	24'	28'	32'	36'	40'
No. 1	10'	(2) 2 x 10s	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s
	12'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	14'	(2) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8
	16'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8
	18'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 13-3/4
	20'	(4) 2 x 12s	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8
	22'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8
No. 2	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11
	14'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	16'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8
	18'	(4) 2 x 12s	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 13-3/4
	20'	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8
	22'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8
No. 3	10'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 8-1/4	3-1/2 x 9-5/8
	12'	(3) 2 x 12s	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 9-5/8	3-1/2 x 11
	14'	(4) 2 x 12s	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8
	16'	3-1/2 x 9-5/8	3-1/2 x 11	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	5-1/2 x 12-3/8
	18'	3-1/2 x 11	3-1/2 x 12-3/8	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	5-1/2 x 12-3/8	5-1/2 x 13-3/4
	20'	3-1/2 x 12-3/8	3-1/2 x 13-3/4	3-1/2 x 13-3/4	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 13-3/4	5-1/2 x 15-1/8
	22'	3-1/2 x 13-3/4	3-1/2 x 15-1/8	3-1/2 x 15-1/8	5-1/2 x 13-3/4	5-1/2 x 15-1/8	5-1/2 x 15-1/8	5-1/2 x 16-1/2
	24'	3-1/2 x 15-1/8	3-1/2 x 16-1/2	3-1/2 x 16-1/2	5-1/2 x 15-1/8	5-1/2 x 16-1/2	5-1/2 x 16-1/2	5-1/2 x 17-7/8

(See *Requirements for Use* on page 7, *Key* (*) and *Notes* on page 19, and *Example* on this page)

Example: Roof Ridge Beam
(See Table 17 on page 20)

Ground Snow Load** = 50 psf

(**Equivalent to a 35 psf Design Roof Snow Load)

Dead Load = 10 psf

Load Duration Factor = 1.15

Span of Supported Roof Framing = 14' + 14' = 28'

Clear Opening = 14'

Beam size is based on the load transferred from 1/2 the span of the supported roof framing.

Southern Pine Beam Selected: No.1 Southern Pine Lumber - (4) 2x12s or
(from Table 17)   24F-1.8E Southern Pine Glulam - 3-1/2" x 11"

SOUTHERN PINE ALLOWABLE LOAD TABLES

Requirements for Use of Allowable Load Tables

1. These tables are for gravity loads only. Consult a registered design professional for wind and seismic load analysis and design.

2. All tables are based on uniformly distributed loads only. Other loads, such as concentrated or unbalanced snow loads, have not been considered and must be analyzed separately.

3. These tables are only applicable to members used under dry-service conditions where the moisture content in use is a maximum of 19% for lumber and less than 16% for glued laminated timber.

4. The compression edge of the header or beam must be laterally supported at intervals of 24" or less. In addition, lateral support must be provided at bearing points.

5. Allowable total and live plf (pounds per lineal foot) loads used to select a header or beam must be equal to or greater than the actual plf loads applied.

6. Multiple-member headers and beams must be properly connected together. See page 5 for connection guidelines.

7. Unbalanced glued laminated timber combinations must be used in simple-span applications only. Balanced beam combinations with equal or greater design values may be substituted and used in either simple-span or continuous-span applications.

8. These tables are only applicable to members used under ordinary ranges of temperature and occasionally heated in use up to 150° F.

Allowable Floor Loads (plf) - 1.00 Load Duration Factor

Key – for each clear opening there are three rows of values:

TL: Maximum total load in pounds per lineal foot (plf) with deflection limited to $\ell/240$

LL: Maximum live load in pounds per lineal foot (plf) with deflection limited to $\ell/360$

BL: Required bearing length in inches

Steps in Sizing Headers and Beams:

1. Determine the required total load (live load + dead load) in plf.
2. Determine the required live load in plf.
3. Select a clear opening and find columns where the plf value in the TL row equals or exceeds the required total load, *and* the plf value in the LL row equals or exceeds the required live load.
4. Check required bearing lengths in the BL row.
5. Find product size options at the top of the columns meeting the total load, live load and bearing length requirements.

Example: Allowable Floor Loads

Floor Live Load = 40 psf
Floor Dead Load = 10 psf
Load Duration Factor = 1.00
Floor Joist Spans = 1 @ 13' and 1 @ 14'
Clear Opening = 12'

Total Load = (13'/2 + 14'/2) x (40 + 10) psf = 675 plf
Live Load = (13'/2 + 14'/2) x 40 psf = 540 plf

Select the 12' clear opening in Tables 21-24. Read across the TL row in each table to find columns with total loads equal to or greater than the required 675 plf. Then check the LL row in those columns to make sure the corresponding live loads are equal to or greater than the required 540 plf. The two best product size options for this example are found in Tables 21 and 24. From Table 21 for No.1 Southern Pine lumber, select a 4-ply 2x12 beam requiring a 1.5" bearing length. Or, from Table 24 for 24F-1.8E Southern Pine glued laminated timber, select a 3-1/2 x11" beam requiring a 3.0" bearing length.

Table 21 – No. 1 Southern Pine Lumber

Clear Opening		1-ply				2-ply				3-ply				4-ply			
		2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	492	754	1027	1389	983	1508	2055	2778	1684	2579	3488	4692	2245	3438	4651	6256
	LL	492	754	1027	1389	983	1508	2055	2778	1684	2579	3488	4692	2245	3438	4651	6256
	BL	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5
6'	TL	224	349	486	677	448	699	972	1353	771	1200	1665	2310	1027	1600	2220	3080
	LL	224	349	486	677	448	699	972	1353	699	1200	1665	2310	932	1600	2220	3080
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
8'	TL	126	199	278	391	253	397	556	783	436	684	957	1344	581	912	1276	1792
	LL	100	199	278	391	201	397	556	783	300	679	957	1344	400	905	1276	1792
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
10'	TL	76	127	179	253	151	254	357	506	227	439	616	871	303	585	822	1161
	LL	52	118	179	253	104	235	357	506	155	352	616	871	207	469	822	1161
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
12'	TL	43	88	124	176	86	176	248	352	130	300	428	607	173	400	570	809
	LL	30	68	124	176	60	137	248	352	90	205	423	607	120	273	564	809
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	27	62	90	129	53	125	181	257	80	187	313	445	106	249	417	593
	LL	19	43	90	129	38	87	179	257	57	130	268	445	76	173	357	593
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	17	41	69	98	34	82	137	196	51	123	238	339	69	164	317	452
	LL	13	29	60	98	26	58	120	196	38	87	180	323	51	116	240	430
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	11	28	54	77	23	56	107	153	34	84	181	266	46	112	241	355
	LL	9	20	42	76	18	41	85	152	27	61	127	227	36	82	169	303
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

(See *Requirements for Use* on page 23, and *Key*, *Example* and *Notes* on this page)

Notes for Tables 21 - 24: Allowable Floor Loads (plf) - 1.00 Load Duration Factor

- Tabulated total loads (TL) and live loads (LL) represent the allowable uniformly distributed loads that a beam can support in addition to its own weight. Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load. To determine an allowable live load for a deflection limit other than $\ell/360$, multiply the LL value by the ratio of 360 divided by the desired deflection constant. The result must not exceed the corresponding TL value for the same clear opening and product.
- Tabulated bearing lengths (BL) reflect the number of 2x trimmers required at each end of the header or beam based on the corresponding plf loads (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.). Additional checks may be required for bearing length and trimmers.
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Interpolation between clear openings is permitted.
- The design span is assumed to be the clear opening plus 1/2 the required bearing length at each end.

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Table 22 – No. 2 Southern Pine Lumber

Clear Opening		1-ply 2 x 6	2 x 8	2 x 10	2 x 12	2-ply 2 x 6	2 x 8	2 x 10	2 x 12	3-ply 2 x 6	2 x 8	2 x 10	2 x 12	4-ply 2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	377	613	849	1125	754	1225	1697	2249	1293	2094	2887	3804	1724	2792	3849	5072
	LL	377	613	849	1125	754	1225	1697	2249	1293	2094	2887	3804	1724	2792	3849	5072
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5
6'	TL	170	281	396	536	340	562	792	1071	586	967	1358	1834	782	1289	1811	2445
	LL	170	281	396	536	340	562	792	1071	586	967	1358	1834	782	1289	1811	2445
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
8'	TL	96	159	225	307	191	318	451	615	330	548	776	1057	440	731	1035	1409
	LL	95	159	225	307	190	318	451	615	284	548	776	1057	379	731	1035	1409
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
10'	TL	61	101	144	198	121	203	288	395	210	351	498	681	280	467	664	908
	LL	49	101	144	198	98	203	288	395	146	333	498	681	195	444	664	908
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
12'	TL	41	70	100	137	81	140	199	274	122	242	345	473	162	323	459	630
	LL	28	65	100	137	57	129	199	274	85	194	345	473	113	258	459	630
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	25	51	73	100	50	102	145	200	75	176	251	346	99	234	335	461
	LL	18	41	73	100	36	82	145	200	54	122	251	346	72	163	335	461
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	16	38	55	76	32	77	110	151	48	116	191	263	64	154	254	350
	LL	12	27	55	76	24	55	110	151	36	82	170	263	48	110	227	350
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	11	26	43	59	21	53	85	118	32	79	149	205	43	105	198	274
	LL	8	19	40	59	17	39	80	118	25	58	120	205	34	77	160	274
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Table 23 – No. 3 Southern Pine Lumber

Clear Opening		1-ply 2 x 6	2 x 8	2 x 10	2 x 12	2-ply 2 x 6	2 x 8	2 x 10	2 x 12	3-ply 2 x 6	2 x 8	2 x 10	2 x 12	4-ply 2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	229	366	504	699	458	733	1007	1397	788	1258	1725	2384	1050	1677	2300	3179
	LL	229	366	504	699	458	733	1007	1397	788	1258	1725	2384	1050	1677	2300	3179
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
6'	TL	102	165	229	322	204	330	458	644	352	569	788	1106	470	758	1051	1475
	LL	102	165	229	322	204	330	458	644	352	569	788	1106	470	758	1051	1475
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
8'	TL	57	92	129	182	114	185	257	364	197	319	444	628	262	426	592	837
	LL	57	92	129	182	114	185	257	364	197	319	444	628	262	426	592	837
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10'	TL	36	58	82	116	71	117	163	232	124	202	282	401	165	270	377	534
	LL	36	58	82	116	71	117	163	232	124	202	282	401	165	270	377	534
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
12'	TL	24	40	56	80	48	80	112	159	84	138	194	276	113	185	258	368
	LL	24	40	56	80	48	80	112	159	75	138	194	276	99	185	258	368
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	17	29	40	57	35	57	80	115	61	100	140	200	81	133	187	267
	LL	16	29	40	57	31	57	80	115	47	100	140	200	63	133	187	267
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	13	21	30	43	26	43	60	86	41	75	105	151	55	100	140	201
	LL	11	21	30	43	21	43	60	86	32	72	105	151	42	96	140	201
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	9	16	23	33	18	33	46	67	27	57	81	117	36	77	108	155
	LL	7	16	23	33	15	33	46	67	22	51	81	117	30	68	108	155
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

(See *Requirements for Use* on page 23, and *Key*, *Example* and *Notes* on page 24)

Table 24 – 24F-1.8E Southern Pine Glued Laminated Timber

Clear Opening		3-1/2" Width Depth (in.)								5-1/2" Width Depth (in.)									
		8-1/4	9-5/8	11	12-3/8	13-3/4	15-1/8	16-1/2	17-7/8	11	12-3/8	13-3/4	15-1/8	16-1/2	17-7/8	19-1/4	20-5/8	22	23-3/8
6'	TL	1659	2212	2819	–	–	–	–	–	4431	5453	–	–	–	–	–	–	–	–
	LL	1659	2212	2819	–	–	–	–	–	4431	5453	–	–	–	–	–	–	–	–
	BL	3.0	3.0	4.5	–	–	–	–	–	4.5	4.5	–	–	–	–	–	–	–	–
8'	TL	954	1284	1656	2065	2506	2975	–	–	2603	3245	3938	4675	5447	–	–	–	–	–
	LL	813	1268	1656	2065	2506	2975	–	–	2603	3245	3938	4675	5447	–	–	–	–	–
	BL	1.5	3.0	3.0	4.5	4.5	6.0	–	–	3.0	4.5	4.5	6.0	6.0	–	–	–	–	–
10'	TL	615	832	1079	1353	1654	1978	2323	2688	1696	2127	2599	3108	3651	4224	4822	5442	–	–
	LL	423	665	980	1353	1654	1978	2323	2688	1540	2127	2599	3108	3651	4224	4822	5442	–	–
	BL	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0	3.0	3.0	4.5	4.5	6.0	6.0	7.5	7.5	–	–
12'	TL	365	576	755	950	1165	1400	1651	1920	1186	1493	1831	2199	2595	3017	3462	3920	4392	4880
	LL	248	390	577	813	1102	1400	1651	1920	906	1277	1732	2199	2595	3017	3462	3920	4392	4880
	BL	1.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	3.0	3.0	3.0	4.5	4.5	6.0	6.0	7.5	7.5	9.0
14'	TL	229	364	541	701	862	1038	1228	1432	850	1102	1355	1631	1930	2244	2574	2922	3286	3665
	LL	157	248	367	518	705	930	1195	1432	577	815	1108	1462	1878	2244	2574	2922	3286	3665
	BL	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0	6.0	7.5
16'	TL	151	242	363	515	662	798	947	1106	570	809	1040	1253	1479	1721	1979	2251	2538	2838
	LL	106	167	248	351	477	631	813	1025	390	551	750	992	1278	1611	1979	2251	2538	2838
	BL	1.5	1.5	1.5	3.0	3.0	3.0	3.0	4.5	1.5	3.0	3.0	3.0	3.0	4.5	4.5	6.0	6.0	6.0
18'	TL	104	168	253	361	495	632	750	878	398	568	778	985	1165	1358	1564	1782	2012	2253
	LL	74	118	175	248	338	447	577	728	275	390	531	702	907	1145	1421	1735	2012	2253
	BL	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	4.5	6.0	6.0
20'	TL	74	121	183	262	360	479	608	712	287	411	566	753	939	1096	1263	1441	1629	1827
	LL	54	86	128	182	248	328	423	536	201	286	390	516	666	842	1046	1279	1542	1827
	BL	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	4.5	6.0
22'	TL	–	89	135	195	269	359	466	586	212	306	422	564	732	901	1039	1187	1343	1508
	LL	–	65	97	137	187	248	320	405	152	215	294	390	503	637	792	969	1170	1396
	BL	–	1.5	1.5	1.5	1.5	3.0	3.0	3.0	1.5	1.5	1.5	3.0	3.0	3.0	3.0	4.5	4.5	4.5
24'	TL	–	66	102	148	205	275	358	455	160	232	322	431	562	715	869	993	1124	1264
	LL	–	50	74	106	145	192	248	314	117	166	227	302	390	493	613	751	908	1084
	BL	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0	4.5	4.5
26'	TL	–	–	78	114	159	214	279	356	123	179	250	336	439	560	701	841	953	1072
	LL	–	–	59	83	114	151	196	248	92	131	179	238	308	390	485	594	718	858
	BL	–	–	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5
28'	TL	–	–	–	89	125	169	221	283	–	140	197	265	348	445	558	688	817	919
	LL	–	–	–	67	91	122	157	199	–	105	144	191	247	313	390	478	577	690
	BL	–	–	–	1.5	1.5	1.5	1.5	3.0	–	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0	4.5
30'	TL	–	–	–	71	100	135	178	228	–	111	157	212	279	358	451	556	677	796
	LL	–	–	–	54	74	99	128	163	–	85	117	156	201	255	318	390	471	563
	BL	–	–	–	1.5	1.5	1.5	1.5	1.5	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0
32'	TL	–	–	–	–	80	109	144	186	–	–	126	171	227	292	368	455	554	667
	LL	–	–	–	–	61	82	106	134	–	–	97	128	166	211	263	322	390	466
	BL	–	–	–	–	1.5	1.5	1.5	1.5	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0
34'	TL	–	–	–	–	65	89	118	152	–	–	102	140	185	239	303	376	459	553
	LL	–	–	–	–	51	68	88	112	–	–	81	107	139	176	220	269	326	390
	BL	–	–	–	–	1.5	1.5	1.5	1.5	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0
36'	TL	–	–	–	–	–	73	97	126	–	–	–	114	153	198	251	313	383	462
	LL	–	–	–	–	–	57	74	95	–	–	–	90	117	149	185	227	275	329
	BL	–	–	–	–	–	1.5	1.5	1.5	–	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0
38'	TL	–	–	–	–	–	–	81	105	–	–	–	–	127	165	210	262	321	389
	LL	–	–	–	–	–	–	63	80	–	–	–	–	100	126	158	194	235	281
	BL	–	–	–	–	–	–	1.5	1.5	–	–	–	–	1.5	1.5	1.5	1.5	3.0	3.0

(See *Requirements for Use* on page 23, *Key* and *Example* on page 24, and *Notes* on page 24 and this page)

Notes for Table 24: Allowable Floor Loads (plf) - 1.00 Load Duration Factor

- For practicality, allowable floor loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/2" and 5-1/2"-wide beams, respectively, and when a glued laminated timber beam span-to-depth ratio exceeds 30.
- To determine allowable floor loads for 3- and 3-1/8"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/2"-wide beams by 0.857 and 0.893, respectively. Then check the required bearing length (BL).
- To determine allowable floor loads for 5- and 5-1/8"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/2" wide beams by 0.909 or 0.932, respectively. Then check the required bearing length (BL).

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Key – for each clear opening there are three rows of values:

TL: Maximum total load in pounds per lineal foot (plf) with deflection limited to $\ell/240$

LL: Maximum live load in pounds per lineal foot (plf) with deflection limited to $\ell/360$

BL: Required bearing length in inches

Steps in Sizing Headers and Beams:

1. Determine the required total load (live load + dead load) in plf.
2. Determine the required live load in plf.
3. Select a clear opening and find columns where the plf value in the TL row equals or exceeds the required total load, *and* the plf value in the LL row equals or exceeds the required live load.
4. Check required bearing lengths in the BL row.
5. Find product size options at the top of the columns meeting the total load, live load and bearing length requirements.

Example: Allowable Roof Loads

Ground Snow Load = 40 psf
Design Roof Snow Load = 28 psf
Roof Dead Load = 15 psf
Load Duration Factor = 1.15
Roof Truss Span = 26' + 2' overhang
Clear Opening = 10'

Total Load = (26'/2 + 2') x (28 + 15) psf = 645 plf
Live Load = (26'/2 + 2') x 28 psf = 420 plf

Select the 10' clear opening in Tables 25-28. Read across the TL row in each table to find columns with total loads equal to or greater than the required 645 plf. Then check the LL row in those columns to make sure the corresponding live loads are equal to or greater than the required 420 plf. The five best product size options for this example are found in Tables 25, 26 and 28. From Table 25 for No.1 Southern Pine lumber, select a 3-ply 2x10 beam or a 4-ply 2x8 beam, each requiring a 1.5" bearing length. From Table 26 for No.2 Southern Pine lumber, select 3-ply 2x12 requiring a 3.0" bearing length, or a 4-ply 2x10 requiring a 1.5" bearing length. Finally, from Table 28 for 24F-1.8E Southern Pine glued laminated timber, select a 3-1/2x9-5/8" beam requiring a 3.0" bearing length.

Table 25 – No. 1 Southern Pine Lumber

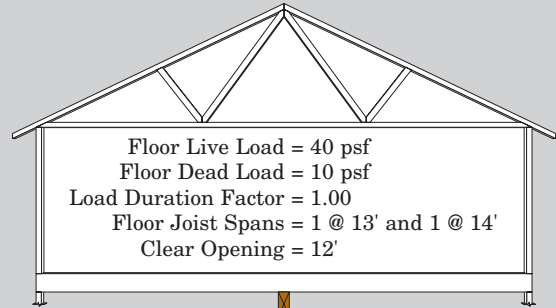| Clear Opening		1-ply				2-ply				3-ply				4-ply			
		2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	561	856	1161	1557	1123	1713	2322	3114	1920	2925	3931	5240	2560	3900	5242	6987
	LL	561	856	1161	1557	1123	1713	2322	3114	1920	2925	3931	5240	2560	3900	5242	6987
	BL	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	3.0	3.0	4.5	6.0	3.0	3.0	4.5	6.0
6'	TL	257	400	555	770	514	800	1110	1540	884	1373	1899	2624	1178	1830	2532	3499
	LL	233	400	555	770	466	800	1110	1540	695	1373	1899	2624	927	1830	2532	3499
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5
8'	TL	145	228	319	448	291	456	638	896	444	785	1096	1536	592	1047	1462	2048
	LL	100	226	319	448	200	452	638	896	300	675	1096	1536	400	900	1462	2048
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
10'	TL	76	146	205	290	151	293	411	580	227	505	708	999	303	673	944	1331
	LL	52	117	205	290	104	235	411	580	155	351	708	999	207	468	944	1331
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
12'	TL	43	100	143	202	86	200	285	404	130	300	492	697	173	400	656	930
	LL	30	68	141	202	60	137	282	404	90	205	422	697	120	273	562	930
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
14'	TL	27	62	104	148	53	125	209	297	80	187	361	512	106	249	481	683
	LL	19	43	89	148	38	87	179	297	57	130	267	477	76	173	357	636
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	17	41	79	113	34	82	159	226	51	123	260	391	69	164	347	521
	LL	13	29	60	108	26	58	120	215	38	87	180	322	51	116	240	429
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	11	28	60	89	23	56	120	177	34	84	181	307	46	112	241	410
	LL	9	20	42	76	18	41	85	152	27	61	127	227	36	82	169	303
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

(See *Requirements for Use* on page 23, and *Key*, *Example* and *Notes* on this page)

Notes for Tables 25 - 28: Allowable Roof Loads (plf) - 1.15 Load Duration Factor

- Tabulated total loads (TL) and live loads (LL) represent the allowable uniformly distributed loads that a beam can support in addition to its own weight. Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load. To determine an allowable live load for a deflection limit other than $\ell/360$, multiply the LL value by the ratio of 360 divided by the desired deflection constant. The result must not exceed the corresponding TL value for the same clear opening and product.
- Tabulated bearing lengths (BL) reflect the number of 2x trimmers required at each end of the header or beam based on the corresponding plf loads (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.). Additional checks may be required for bearing length and trimmers.
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Interpolation between clear openings is permitted.
- The design span is assumed to be the clear opening plus 1/2 the required bearing length at each end.

Table 26 – No. 2 Southern Pine Lumber

Clear Opening		1-ply 2 x 6	2 x 8	2 x 10	2 x 12	2-ply 2 x 6	2 x 8	2 x 10	2 x 12	3-ply 2 x 6	2 x 8	2 x 10	2 x 12	4-ply 2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	431	698	962	1268	862	1396	1925	2536	1478	2381	3266	4276	1970	3175	4355	5701
	LL	431	698	962	1268	862	1396	1925	2536	1478	2381	3266	4276	1970	3175	4355	5701
	BL	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5
6'	TL	195	322	453	611	391	644	906	1222	673	1107	1552	2089	897	1476	2070	2786
	LL	195	322	453	611	391	644	906	1222	662	1107	1552	2089	882	1476	2070	2786
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
8'	TL	110	183	259	352	220	366	517	704	380	630	890	1210	506	840	1187	1614
	LL	95	183	259	352	189	366	517	704	283	630	890	1210	378	840	1187	1614
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
10'	TL	70	117	166	227	140	234	332	454	214	404	573	782	285	538	764	1043
	LL	49	111	166	227	98	222	332	454	146	332	573	782	195	442	764	1043
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
12'	TL	41	81	115	158	81	161	230	315	122	279	397	544	162	372	529	725
	LL	28	65	115	158	57	129	230	315	85	193	397	544	113	258	529	725
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	25	59	84	115	50	117	168	230	75	176	290	399	99	234	387	531
	LL	18	41	84	115	36	82	168	230	54	122	253	399	72	163	337	531
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	16	39	64	88	32	77	127	175	48	116	220	303	64	154	294	404
	LL	12	27	57	88	24	55	113	175	36	82	170	303	48	110	226	404
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	11	26	50	68	21	53	99	137	32	79	169	238	43	105	226	317
	LL	8	19	40	68	17	39	80	137	25	58	120	214	34	77	159	286
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Table 27 – No. 3 Southern Pine Lumber

Clear Opening		1-ply 2 x 6	2 x 8	2 x 10	2 x 12	2-ply 2 x 6	2 x 8	2 x 10	2 x 12	3-ply 2 x 6	2 x 8	2 x 10	2 x 12	4-ply 2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	263	419	575	795	525	839	1150	1589	903	1438	1967	2707	1204	1917	2623	3609
	LL	263	419	575	795	525	839	1150	1589	903	1438	1967	2707	1204	1917	2623	3609
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
6'	TL	117	190	263	369	235	379	525	738	405	653	904	1267	540	871	1206	1689
	LL	117	190	263	369	235	379	525	738	405	653	904	1267	540	871	1206	1689
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
8'	TL	66	106	148	209	131	213	296	419	227	368	511	721	302	490	682	962
	LL	66	106	148	209	131	213	296	419	227	368	511	721	302	490	682	962
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10'	TL	41	67	94	134	83	135	188	267	143	234	326	462	191	311	434	615
	LL	41	67	94	134	83	135	188	267	128	234	326	462	171	311	434	615
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
12'	TL	28	46	65	92	56	92	129	184	98	160	224	318	131	214	299	425
	LL	25	46	65	92	50	92	129	184	75	160	224	318	99	214	299	425
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	20	33	47	67	40	67	93	133	65	116	162	231	86	154	216	309
	LL	16	33	47	67	31	67	93	133	47	107	162	231	63	143	216	309
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	14	25	35	50	28	50	70	100	41	87	122	175	55	116	163	233
	LL	11	24	35	50	21	48	70	100	32	72	122	175	42	96	163	233
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	9	19	27	39	18	38	54	78	27	67	94	136	36	90	126	181
	LL	7	17	27	39	15	34	54	78	22	51	94	136	30	68	126	181
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

(See *Requirements for Use* on page 23, and *Key*, *Example* and *Notes* on page 27)

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Table 28 – 24F-1.8E Southern Pine Glued Laminated Timber

Clear Opening		3-1/2" Width — Depth (in.)								5-1/2" Width — Depth (in.)									
		8-1/4	9-5/8	11	12-3/8	13-3/4	15-1/8	16-1/2	17-7/8	11	12-3/8	13-3/4	15-1/8	16-1/2	17-7/8	19-1/4	20-5/8	22	23-3/8
6'	TL	1892	2514	–	–	–	–	–	–	5017	–	–	–	–	–	–	–	–	–
	LL	1830	2514	–	–	–	–	–	–	5017	–	–	–	–	–	–	–	–	–
	BL	3.0	4.5	–	–	–	–	–	–	4.5	–	–	–	–	–	–	–	–	–
8'	TL	1093	1469	1889	2350	2844	–	–	–	2969	3693	4469	5289	–	–	–	–	–	–
	LL	807	1256	1830	2350	2844	–	–	–	2876	3693	4469	5289	–	–	–	–	–	–
	BL	3.0	3.0	4.5	4.5	6.0	–	–	–	4.5	4.5	6.0	6.0	–	–	–	–	–	–
10'	TL	627	954	1235	1547	1887	2252	2640	–	1941	2431	2965	3539	4148	4788	5452	–	–	–
	LL	423	661	972	1360	1830	2252	2640	–	1527	2137	2876	3539	4148	4788	5452	–	–	–
	BL	1.5	3.0	3.0	4.5	4.5	6.0	6.0	–	3.0	4.5	4.5	6.0	6.0	7.5	7.5	–	–	–
12'	TL	365	576	851	1089	1334	1600	1885	2187	1337	1711	2096	2514	2961	3437	3937	4449	4976	5517
	LL	248	390	573	807	1092	1433	1830	2187	901	1268	1717	2252	2876	3437	3937	4449	4976	5517
	BL	1.5	1.5	3.0	3.0	4.5	4.5	4.5	6.0	3.0	3.0	4.5	4.5	4.5	6.0	7.5	7.5	9.0	9.0
14'	TL	229	364	541	764	989	1189	1406	1637	850	1200	1554	1869	2209	2565	2938	3331	3741	4166
	LL	157	248	367	517	701	923	1184	1486	577	812	1101	1450	1860	2336	2878	3331	3741	4166
	BL	1.5	1.5	1.5	3.0	3.0	4.5	4.5	6.0	1.5	3.0	3.0	4.5	4.5	6.0	6.0	6.0	7.5	9.0
16'	TL	151	242	363	515	702	916	1085	1267	570	809	1103	1438	1696	1972	2265	2574	2898	3236
	LL	106	167	248	351	476	627	807	1016	390	551	748	985	1268	1597	1975	2403	2882	3236
	BL	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0	6.0	7.5
18'	TL	104	168	253	361	495	656	846	1007	398	568	778	1031	1329	1558	1793	2041	2302	2576
	LL	74	118	175	248	338	446	573	723	275	390	531	701	902	1138	1410	1719	2068	2456
	BL	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0	6.0
20'	TL	74	121	183	262	360	479	620	784	287	411	566	753	974	1232	1451	1654	1868	2093
	LL	54	86	128	182	248	328	423	533	201	286	390	516	665	838	1040	1270	1530	1821
	BL	1.5	1.5	1.5	1.5	1.5	3.0	3.0	4.5	1.5	1.5	1.5	3.0	3.0	4.5	4.5	4.5	6.0	6.0
22'	TL	–	89	135	195	269	359	466	591	212	306	422	564	732	929	1156	1364	1543	1731
	LL	–	65	97	137	187	248	320	405	152	215	294	390	503	636	788	963	1162	1385
	BL	–	1.5	1.5	1.5	1.5	3.0	3.0	3.0	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	4.5	6.0
24'	TL	–	66	102	148	205	275	358	455	160	232	322	431	562	715	892	1094	1293	1452
	LL	–	50	74	106	145	192	248	314	117	166	227	302	390	493	613	748	903	1077
	BL	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	4.5
26'	TL	–	–	78	114	159	214	279	356	123	179	250	336	439	560	701	861	1043	1233
	LL	–	–	59	83	114	151	196	248	92	131	179	238	308	390	485	593	715	853
	BL	–	–	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5
28'	TL	–	–	–	89	125	169	221	283	–	140	197	265	348	445	558	688	835	1000
	LL	–	–	–	67	91	122	157	199	–	105	144	191	247	313	390	478	577	688
	BL	–	–	–	1.5	1.5	1.5	1.5	3.0	–	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0	4.5
30'	TL	–	–	–	71	100	135	178	228	–	111	157	212	279	358	451	556	677	812
	LL	–	–	–	54	74	99	128	163	–	85	117	156	201	255	318	390	471	563
	BL	–	–	–	1.5	1.5	1.5	1.5	1.5	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5
32'	TL	–	–	–	–	80	109	144	186	–	–	126	171	227	292	368	455	554	667
	LL	–	–	–	–	61	82	106	134	–	–	97	128	166	211	263	322	390	466
	BL	–	–	–	–	1.5	1.5	1.5	1.5	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0
34'	TL	–	–	–	–	65	89	118	152	–	–	102	140	185	239	303	376	459	553
	LL	–	–	–	–	51	68	88	112	–	–	81	107	139	176	220	269	326	390
	BL	–	–	–	–	1.5	1.5	1.5	1.5	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0
36'	TL	–	–	–	–	–	73	97	126	–	–	–	114	153	198	251	313	383	462
	LL	–	–	–	–	–	57	74	95	–	–	–	90	117	149	185	227	275	329
	BL	–	–	–	–	–	1.5	1.5	1.5	–	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0
38'	TL	–	–	–	–	–	–	81	105	–	–	–	–	127	165	210	262	321	389
	LL	–	–	–	–	–	–	63	80	–	–	–	–	100	126	158	194	235	281
	BL	–	–	–	–	–	–	1.5	1.5	–	–	–	–	1.5	1.5	1.5	1.5	3.0	3.0

(See *Requirements for Use* on page 23, *Key* and *Example* on page 27, and *Notes* on page 27 and this page)

Notes for Table 28: Allowable Roof Loads (plf) - 1.15 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/2" and 5-1/2"-wide beams, respectively, and when a glued laminated timber's span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/8"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/2"-wide beams by 0.857 and 0.893, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/8"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/2" wide beams by 0.909 or 0.932, respectively. Then check the required bearing length (BL).

SOUTHERN PINE — Allowable Load Tables

Allowable Roof Loads (plf) – 1.25 Load Duration Factor

Key – for each clear opening there are three rows of values:
- TL: Maximum total load in pounds per lineal foot (plf) with deflection limited to ℓ/240
- LL: Maximum live load in pounds per lineal foot (plf) with deflection limited to ℓ/360
- BL: Required bearing length in inches

Steps in Sizing Headers or Beams:
1. Determine the required total load (live load + dead load) in plf.
2. Determine the required live load in plf.
3. Select a clear opening and find columns where the plf value in the TL row equals or exceeds the required total load, *and* the plf value in the LL row equals or exceeds the required live load.
4. Check required bearing lengths in the BL row.
5. Find product size options at the top of the columns meeting the total load, live load and bearing length requirements.

Example: Allowable Roof Loads

Roof Live Load = 20 psf
Roof Dead Load = 7 psf
Load Duration Factor = 1.25
Roof Truss Span = 26' + 2' overhang
Clear Opening = 16'
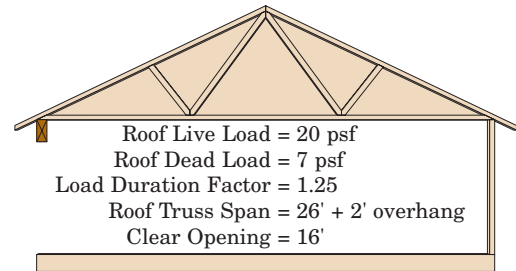
Total Load = (26'/2 + 2') x (20 + 7) psf = 405 plf
Live Load = (26'/2 + 2') x 20 psf = 300 plf

Select the 16' clear opening in Tables 29-32. Read across the TL row in each table to find columns with total loads equal to or greater than the required 405 plf. Then check the LL row in those columns to make sure the corresponding live loads are equal to or greater than the required 300 plf. The three best product size options for this example are found in Tables 29, 30 and 32. From Table 29 for No.1 Southern Pine lumber, select a 3-ply 2x12 beam requiring a 1.5" bearing length. From Table 30 for No.2 Southern Pine lumber, select a 4-ply 2x12 requiring a 1.5" bearing length. Finally, from Table 32 for 24F-1.8E Southern Pine glued laminated timber, select a 3-1/2x12-3/8" beam requiring a 3.0" bearing length.

Table 29 – No. 1 Southern Pine Lumber

Clear Opening		1-ply				2-ply				3-ply				4-ply			
		2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	607	923	1247	1663	1214	1846	2494	3327	2075	3150	4215	5585	2766	4201	5620	7446
	LL	607	923	1247	1663	1214	1846	2494	3327	2075	3150	4215	5585	2766	4201	5620	7446
	BL	1.5	3.0	4.5	4.5	1.5	3.0	4.5	4.5	3.0	3.0	4.5	6.0	3.0	3.0	4.5	6.0
6'	TL	279	433	600	831	557	867	1201	1662	958	1486	2052	2829	1278	1982	2736	3772
	LL	232	433	600	831	465	867	1201	1662	692	1486	2052	2829	923	1982	2736	3772
	BL	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5
8'	TL	148	248	346	485	296	495	692	970	444	852	1189	1663	592	1136	1585	2217
	LL	100	226	346	485	200	451	692	970	300	673	1189	1663	400	897	1585	2217
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
10'	TL	76	159	223	315	151	318	446	630	227	518	769	1083	303	691	1025	1444
	LL	52	117	223	315	104	234	446	630	155	350	718	1083	207	467	958	1444
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
12'	TL	43	100	155	220	86	200	310	439	130	300	535	757	173	400	714	1010
	LL	30	68	141	220	60	137	282	439	90	205	421	748	120	273	561	998
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
14'	TL	27	62	114	161	53	125	227	323	80	187	391	557	106	249	521	743
	LL	19	43	89	159	38	87	178	319	57	130	267	476	76	173	356	635
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
16'	TL	17	41	86	123	34	82	173	246	51	123	260	426	69	164	347	568
	LL	13	29	60	107	26	58	120	215	38	87	180	321	51	116	240	428
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	11	28	60	97	23	56	120	193	34	84	181	328	46	112	241	437
	LL	9	20	42	76	18	41	85	151	27	61	127	227	36	82	169	302
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

(See *Requirements for Use* on page 23, and *Key*, *Example* and *Notes* on this page)

Notes for Tables 29 - 32: Allowable Roof Loads (plf) - 1.25 Load Duration Factor

- Tabulated total loads (TL) and live loads (LL) represent the allowable uniformly distributed loads that a beam can support in addition to its own weight. Deflection is limited to ℓ/240 for total load and ℓ/360 for live load. To determine an allowable live load for a deflection limit other than ℓ/360, multiply the LL value by the ratio of 360 divided by the desired deflection constant. The result must not exceed the corresponding TL value for the same clear opening and product.
- Tabulated bearing lengths (BL) reflect the number of 2x trimmers required at each end of the header or beam based on the corresponding plf loads (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.). Additional checks may be required for bearing length and trimmers.
- See *Assumptions for Table Development* beginning on page 2 for details on design assumptions made to generate these tables.
- Interpolation between clear openings is permitted.
- The design span is assumed to be the clear opening plus 1/2 the required bearing length at each end.

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Table 30 – No. 2 Southern Pine Lumber

Clear Opening		1-ply				2-ply				3-ply				4-ply			
		2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	467	754	1036	1360	934	1508	2072	2721	1600	2569	3512	4577	2133	3426	4682	6102
	LL	467	754	1036	1360	934	1508	2072	2721	1600	2569	3512	4577	2133	3426	4682	6102
	BL	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5	1.5	3.0	3.0	4.5
6'	TL	212	349	490	661	424	699	981	1322	730	1200	1680	2257	974	1600	2240	3009
	LL	212	349	490	661	424	699	981	1322	660	1200	1680	2257	879	1600	2240	3009
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
8'	TL	120	199	281	382	239	397	562	764	413	684	966	1312	550	912	1288	1749
	LL	95	199	281	382	189	397	562	764	283	639	966	1312	377	852	1288	1749
	BL	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
10'	TL	71	127	180	247	142	254	361	493	214	439	622	849	285	585	830	1132
	LL	49	111	180	247	98	221	361	493	146	331	622	849	195	442	830	1132
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
12'	TL	41	88	125	171	81	176	250	343	122	282	432	591	162	376	576	789
	LL	28	64	125	171	57	129	250	343	85	193	398	591	113	258	531	789
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	25	59	91	125	50	117	183	251	75	176	316	434	99	234	421	578
	LL	18	41	84	125	36	82	169	251	54	122	252	434	72	163	336	578
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	16	39	69	95	32	77	139	191	48	116	240	330	64	154	320	441
	LL	12	27	57	95	24	55	113	191	36	82	170	304	48	110	226	405
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	11	26	54	75	21	53	108	149	32	79	169	259	43	105	226	346
	LL	8	19	40	71	17	39	80	143	25	58	120	214	34	77	159	285
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

Table 31 – No. 3 Southern Pine Lumber

Clear Opening		1-ply				2-ply				3-ply				4-ply			
		2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12	2 x 6	2 x 8	2 x 10	2 x 12
4'	TL	285	454	622	857	570	908	1244	1715	980	1557	2125	2917	1306	2076	2834	3889
	LL	285	454	622	857	570	908	1244	1715	980	1557	2125	2917	1306	2076	2834	3889
	BL	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0	1.5	1.5	3.0	3.0
6'	TL	128	206	285	400	255	412	570	800	440	709	981	1373	587	946	1308	1830
	LL	128	206	285	400	255	412	570	800	440	709	981	1373	587	946	1308	1830
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	3.0
8'	TL	71	116	161	227	143	232	322	455	247	400	556	783	329	533	741	1045
	LL	71	116	161	227	143	232	322	455	247	400	556	783	329	533	741	1045
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
10'	TL	45	73	103	145	90	147	205	291	156	254	355	502	208	339	473	669
	LL	43	73	103	145	86	147	205	291	128	254	355	502	171	339	473	669
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
12'	TL	31	50	70	100	62	101	141	200	106	175	244	347	141	233	326	462
	LL	25	50	70	100	50	101	141	200	74	170	244	347	99	227	326	462
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
14'	TL	22	36	51	73	43	73	102	145	65	127	177	252	86	169	236	337
	LL	16	36	51	73	31	72	102	145	47	107	177	252	63	143	236	337
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
16'	TL	14	27	38	55	28	55	77	110	41	95	134	191	55	127	178	255
	LL	11	24	38	55	21	48	77	110	32	72	134	191	42	96	178	255
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
18'	TL	9	21	30	43	18	42	59	85	27	68	104	149	36	91	138	198
	LL	7	17	30	43	15	34	59	85	22	51	104	149	30	68	138	198
	BL	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5

(See *Requirements for Use* on page 23, and *Key*, *Example* and *Notes* on page 30)

Table 32 – 24F-1.8E Southern Pine Glued Laminated Timber

Clear Opening		3-1/2" Width Depth (in.)								5-1/2" Width Depth (in.)									
		8-1/4	9-5/8	11	12-3/8	13-3/4	15-1/8	16-1/2	17-7/8	11	12-3/8	13-3/4	15-1/8	16-1/2	17-7/8	19-1/4	20-5/8	22	23-3/8
6'	TL	2045	2711	–	–	–	–	–	–	5397	–	–	–	–	–	–	–	–	–
	LL	1814	2711	–	–	–	–	–	–	5397	–	–	–	–	–	–	–	–	–
	BL	3.0	4.5	–	–	–	–	–	–	4.5	–	–	–	–	–	–	–	–	–
8'	TL	1184	1590	2042	2536	–	–	–	–	3210	3985	4815	5686	–	–	–	–	–	–
	LL	803	1247	1814	2509	–	–	–	–	2851	3942	4815	5686	–	–	–	–	–	–
	BL	3.0	3.0	4.5	4.5	–	–	–	–	4.5	4.5	6.0	6.0	–	–	–	–	–	–
10'	TL	627	980	1339	1675	2040	2432	2846	–	2104	2631	3206	3821	4473	5154	5859	–	–	–
	LL	423	659	966	1351	1814	2360	2846	–	1518	2122	2851	3708	4473	5154	5859	–	–	–
	BL	1.5	3.0	3.0	4.5	4.5	6.0	6.0	–	3.0	4.5	4.5	6.0	6.0	7.5	9.0	–	–	–
12'	TL	365	576	851	1181	1445	1731	2038	2362	1337	1856	2271	2721	3202	3712	4247	4794	5354	5928
	LL	248	390	573	803	1086	1422	1814	2263	901	1262	1706	2235	2851	3556	4247	4794	5354	5928
	BL	1.5	1.5	3.0	3.0	4.5	4.5	6.0	6.0	3.0	3.0	4.5	4.5	6.0	6.0	7.5	7.5	9.0	10.5
14'	TL	229	364	541	764	1035	1289	1523	1772	850	1200	1627	2026	2393	2776	3178	3599	4037	4491
	LL	157	248	367	517	698	918	1176	1475	577	812	1097	1442	1849	2318	2853	3455	4037	4491
	BL	1.5	1.5	1.5	3.0	3.0	4.5	4.5	6.0	1.5	3.0	3.0	4.5	4.5	6.0	6.0	7.5	7.5	9.0
16'	TL	151	242	363	515	702	926	1177	1373	570	809	1103	1455	1839	2137	2453	2786	3134	3498
	LL	106	167	248	351	476	626	803	1010	390	551	748	984	1262	1588	1962	2385	2858	3381
	BL	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0	7.5	7.5
18'	TL	104	168	253	361	495	656	846	1065	398	568	778	1031	1329	1674	1944	2212	2494	2789
	LL	74	118	175	248	338	446	573	720	275	390	531	701	901	1133	1403	1709	2054	2437
	BL	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0	7.5
20'	TL	74	121	183	262	360	479	620	784	287	411	566	753	974	1232	1527	1794	2026	2269
	LL	54	86	128	182	248	328	423	533	201	286	390	516	665	838	1036	1264	1522	1810
	BL	1.5	1.5	1.5	1.5	1.5	3.0	3.0	4.5	1.5	1.5	1.5	3.0	3.0	4.5	4.5	4.5	6.0	6.0
22'	TL	–	89	135	195	269	359	466	591	212	306	422	564	732	929	1156	1413	1674	1877
	LL	–	65	97	137	187	248	320	405	152	215	294	390	503	636	788	961	1157	1378
	BL	–	1.5	1.5	1.5	1.5	3.0	3.0	3.0	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0	6.0
24'	TL	–	66	102	148	205	275	358	455	160	232	322	431	562	715	892	1094	1321	1576
	LL	–	50	74	106	145	192	248	314	117	166	227	302	390	493	613	748	901	1072
	BL	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5	6.0
26'	TL	–	–	78	114	159	214	279	356	123	179	250	336	439	560	701	861	1043	1246
	LL	–	–	59	83	114	151	196	248	92	131	179	238	308	390	485	593	715	852
	BL	–	–	1.5	1.5	1.5	1.5	1.5	3.0	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5	4.5
28'	TL	–	–	–	89	125	169	221	283	–	140	197	265	348	445	558	688	835	1000
	LL	–	–	–	67	91	122	157	199	–	105	144	191	247	313	390	478	577	688
	BL	–	–	–	1.5	1.5	1.5	1.5	3.0	–	1.5	1.5	1.5	1.5	3.0	3.0	3.0	3.0	4.5
30'	TL	–	–	–	71	100	135	178	228	–	111	157	212	279	358	451	556	677	812
	LL	–	–	–	54	74	99	128	163	–	85	117	156	201	255	318	390	471	563
	BL	–	–	–	1.5	1.5	1.5	1.5	1.5	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0	4.5
32'	TL	–	–	–	–	80	109	144	186	–	–	126	171	227	292	368	455	554	667
	LL	–	–	–	–	61	82	106	134	–	–	97	128	166	211	263	322	390	466
	BL	–	–	–	–	1.5	1.5	1.5	1.5	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0
34'	TL	–	–	–	–	65	89	118	152	–	–	102	140	185	239	303	376	459	553
	LL	–	–	–	–	51	68	88	112	–	–	81	107	139	176	220	269	326	390
	BL	–	–	–	–	1.5	1.5	1.5	1.5	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0	3.0
36'	TL	–	–	–	–	–	73	97	126	–	–	–	114	153	198	251	313	383	462
	LL	–	–	–	–	–	57	74	95	–	–	–	90	117	149	185	227	275	329
	BL	–	–	–	–	–	1.5	1.5	1.5	–	–	–	1.5	1.5	1.5	1.5	1.5	3.0	3.0
38'	TL	–	–	–	–	–	–	81	105	–	–	–	–	127	165	210	262	321	389
	LL	–	–	–	–	–	–	63	80	–	–	–	–	100	126	158	194	235	281
	BL	–	–	–	–	–	–	1.5	1.5	–	–	–	–	1.5	1.5	1.5	1.5	3.0	3.0

(See *Requirements for Use* on page 23, *Key* and *Example* on page 30, and *Notes* on page 30 and this page)

Notes for Table 32: Allowable Roof Loads (plf) - 1.25 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/2" and 5-1/2"-wide beams, respectively, and when a glued laminated timber's span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/8"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/2"-wide beams by 0.857 and 0.893, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/8"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/2" wide beams by 0.909 or 0.932, respectively. Then check the required bearing length (BL).

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WHY? wood?

Wood products are the most environmentally responsible building material available, making them the GREEN choice.

Life cycle of wood building products

sustainable resources
Wood products are produced from trees, a naturally renewable resource. More wood is grown each year in the U.S. than is harvested.

responsible manufacturing
Waste is virtually eliminated when trees are used to make wood products. Bark, trims and sawdust are used as an energy source to help power wood production facilities. It takes far less energy and fossil fuels to produce wood products than to manufacture concrete and steel.

quality construction
As a building material, wood offers a unique combination of benefits, including strength, affordability, ease-of-use and environmental superiority.

recycle renew
At the end of their initial service life, wood products are easily recycled for other uses. Wood contributes fewer greenhouse gas emissions than non-renewable steel and concrete.

long service life
The durability of wood products contributes to the long life of a home. Wood products also store carbon, reducing the amount of carbon in the atmosphere.

renovation upgrade
The flexibility of wood makes renovating a home easy and affordable. Wood is builder-friendly, as well as environmentally friendly. Wood also enhances the aesthetic value of a home when used as flooring, cabinetry, furniture and molding.

How Does Wood Reduce Carbon?

Wood products require less energy to manufacture – meaning fewer greenhouse gases, like CO_2. And trees use CO_2 to grow, changing greenhouse gases into the building blocks we know as wood. That's why wood products are increasingly being recognized as tools to combat climate change.

As trees grow, they remove and store carbon from the atmosphere.

Managed forests increase carbon storage by harvesting slower growing trees, and replacing them with younger trees.

Wood products, such as lumber and furniture, store carbon during their life cycle. They are 50 percent carbon by weight.

Recycling wood products allows them to continue to store carbon indefinitely.

Additional Resources

The Southern Forest Products Association offers a wide variety of helpful publications for design-build professionals. The titles listed below are available online in PDF. Visit SouthernPine.com to download and see a listing of all publications.

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