



Southern Pine Headers & Beams

Southern Pine by Design

Product Performance Facts



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 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). These design values were then adjusted according to the *2001 National Design Specification® for Wood Construction (NDS®)*, published by the American Forest & Paper Association (AF&PA), and applicable building code requirements. Subsequent calculations compared four design conditions using standard engineering formulas for beams with uniform loads, to determine which condition controlled the beam strength. Using this information, the proper beam size or allowable load capacity was then tabulated.

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.



Kenner, LA 70064
504/443-4464
FAX: 504/443-6612
info@southernpine.com

www.southernpine.com

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The mission of the Southern Pine Council (SPC) is to promote the use of Southern Pine lumber products. The SPC and its constituent associations do not develop design values for either lumber or glued laminated timber. Accordingly, the SPC does not warrant the design values on which these tables are based, and assumes no liability for damage caused or contributed to by the use of such design values. In addition, the SPC, its constituent associations and their respective members, have no knowledge of the loads, spans, materials used, quality of workmanship, professional competence of the users, and other factors involved in specifying headers or beams for any given project; and accordingly, cannot, and do not, represent or warrant the performance in use of headers or beams incorporated into any particular construction project, and disclaim liability for injury or damage caused by the failure of a header or beam in use.

Acknowledgment

The Southern Pine Council gratefully thanks Anthony Forest Products for use of their application graphics in the *Size Selection* and *Allowable Load* tables.



Additional Information

The Southern Pine Council offers a wide variety of other helpful publications. A single copy is free upon request. Materials available and the cost per copy for quantities include:

Southern Pine Use Guide (#200, \$2)

24 pages, grade descriptions, design values, specification guidelines

Southern Pine Maximum Spans for Joists & Rafters (#202, \$2)

36 pages, 48 span tables, design criteria

Southern Pine Finger-Jointed Studs (#212, \$1)

8 pages, product descriptions, applications, quality control

Raised Floor Systems: Design & Construction Guide (#411, \$3)

48 pages, advantages, footing and foundation options, construction details

Pressure-Treated Southern Pine (#300, \$2)

20 pages, retentions, standards, proper use and handling

Reference Manuals (available for purchase only):

Allowable Stress Design (ASD) Manual for Engineered Wood Construction – Packaged with the *National Design Specification® (NDS®) for Wood Construction* and the *NDS® Supplement: Design Values for Wood Construction*. (#108, \$70 plus \$6 shipping)

Wood Frame Construction Manual (WFCM) for One- and Two-Family Dwellings – Engineered and prescriptive requirements for wood-frame construction based on dead, live, snow, seismic and wind loads. Includes *Commentary to the Wood Frame Construction Manual*. (#109, \$30 plus \$6 shipping)

For a free listing of all available materials, visit www.southernpine.com, or direct inquiries to:

SPC Box 641700 Kenner, LA 70064-1700
504/443-4464 Fax 504/443-6612
www.southernpine.com
e-mail: info@southernpine.com

Index to 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 – One-Story					
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 – Two-Story					
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
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

Southern Pine Advantages

- Strongest structural species for engineered and framing applications
- High density provides excellent fastener strength
- Cost-competitive choice
- Accepted by all building codes
- Readily available from a local building material supplier
- Easy to handle, cut, and install
- Kiln-dried to enhance in-place performance and dimensional stability
- Easily treated with preservatives for high-moisture applications
- Lends warmth and unmatched beauty to any project
- Renewable and sustainable building material

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 when (4) 2x12s no longer meet design conditions.

The design value table on page 4 lists *Southern Pine Glued Laminated Timber and Lumber Design Values* for grades included in this publication. The resulting *Size Selection* and *Allowable Load* tables also apply to other lumber grades or glued laminated timber combinations with equal or greater design values.

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 layouts, 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 layout 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. crown up) 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 layout 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 must only be 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 of wood products and fasteners and the design of load-supporting wood members and connections must conform to the *National Design Specification® (NDS®)*. All structural members must be so framed, anchored, tied, and braced to provide the required strength and rigidity. Adequate bracing and bridging to resist wind and other lateral forces must also be provided.

Design Loads

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.

The listed ground snow loads in the *Size Selection* table headings were reduced in accordance with ASCE 7-95, *Minimum Design Loads for Buildings and Other Structures*, Section 7.3, to determine the design snow loads for roofs. The equation for an unobstructed flat-roof in the contiguous United States was used with the following factors all assumed to be 1.0: (1) *Exposure* – a location in which snow removal by wind cannot be relied on to reduce roof loads because of terrain, higher structures, or several trees nearby; (2) *Thermal* – a heated structure; and (3) *Importance* – a structure with normal consequences of failure. This reduction equation results in an equivalent design roof snow load of 0.70 times the ground snow load, with a required minimum of 20 psf (pounds per square foot). These assumptions should apply or be conservative for most structures. For structures where these assumptions do not apply or are not conservative, use the *Allowable Load* tables beginning on page 23.

No live load reductions were taken in developing these tables.

Sizes

For the Southern Pine lumber values in these tables, computations are based on net lumber dimensions (actual sizes), provided by the *American Softwood Lumber Standard PS 20-99* 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

For Southern Pine glued laminated timber, computations are also based on actual sizes. Actual widths of 3-1/2" and 5-1/2", plus depths based on actual 1-3/8"-thick laminations have been used for this publication. 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 header and beam sizes provided in these tables were computed using standard engineering design equations for beams with uniform loads applied. Four design conditions were considered:

- *Bending (flexure)*
- *Deflection*
- *Compression perpendicular-to-grain*
- *Shear parallel-to-grain (horizontal shear)*

The design span is defined as the distance from face to face of supports (i.e., clear opening), plus one half the required bearing length at each end.

Load Duration

Wood has the ability to carry substantially greater maximum loads for short durations than for long durations. Tabulated design values apply to normal loading conditions, and may be multiplied by a load duration factor, C_D , permitted by established engineering design criteria and building code regulations. This factor is covered in detail in the *NDS®*, and summarized in the *Southern Pine Use Guide* available from SPC.

Tabulated bending and shear design values were increased for load duration (i.e., $F_v \times C_D$) as follows:

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

Bending

For three- and four-ply lumber members, bending design values were multiplied by the repetitive member factor, $C_r = 1.15$, as allowed by the *NDS®*. The repetitive member factor applies to three or more members in contact and properly connected together for load sharing.

For glued laminated timber, bending design values were multiplied by the volume effect factor, C_V . The equation for Southern Pine is:

$$C_V = (5.125/b)^{1/20} (12/d)^{1/20} (21/L)^{1/20} \leq 1.0, \text{ where:}$$

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

Deflection

Deflection can be the controlling factor in determining the member size required when stiffness or rigidity is important. Deflection limits are expressed as a fraction of the span length in inches (ℓ). 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 aesthetics. Some structural members, such as headers for wide garage doors, may require different deflection limits. The American Forest & Paper Association established more restrictive deflection limits for wall headers in their *2001 Wood Frame Construction Manual*. As a result, the following deflection limits were used in the development of tabular values in this publication:

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

The *Allowable Load* tables (Tables 21-32) may be used to calculate maximum uniform loads for deflection limits other than the $\ell/360$ live load deflection limit tabulated. Multiply the maximum live load numbers given in Row 2 of the *Allowable Load* tables by a ratio of 360 divided by the desired deflection constant (i.e., for a desired deflection limit of $\ell/480$, multiply by 360 divided by 480 = 0.75). The result must not exceed the tabulated total load. This calculation will be accurate when the live loads listed in the table are actually controlled by deflection, and conservative when they are controlled by bending, compression perpendicular-to-grain, or shear parallel-to-grain.

Compression Perpendicular-to-Grain

For the *Size Selection* tables, the compression perpendicular-to-grain computation uses a 3.0" bearing length, except for the sizes marked with an asterisk (*) in the tables, which require a 4.5" bearing length.

For the *Allowable Load* tables, the required bearing length was used to determine the design span. The required bearing length used in all calculations has been converted into the minimum number of 1.5"-wide trimmers needed to support the header or beam. Trimmers are assumed to be nominal 2"-thick vertical lumber members of any species or structural grade, providing full support across the width of the header or beam. If bearing occurs on a wall plate, check for compression perpendicular-to-grain for the species and grade of the plate.

Shear Parallel-to-Grain

All loads within a distance from supports equal to the depth of the members were ignored when calculating the shear force, following NDS® provisions.

Southern Pine Glued Laminated Timber and Lumber 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

NOTE: The glued laminated timber design values were taken from AITC 117-04 for the 24F-1.8E stress class. The Southern Pine lumber design values were taken from the 2002 SPIB Grading Rules. Tabulated design values apply to normal loading conditions, and must only be used in conjunction with appropriate design and service recommendations from the 2001 NDS®. Values are given in pounds per square inch (psi).



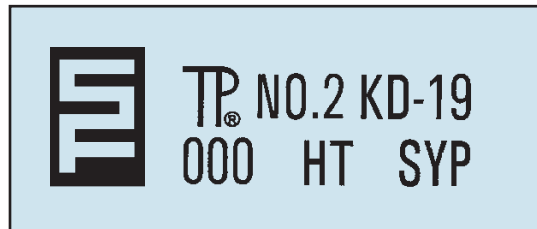
Identification

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 20-99* 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

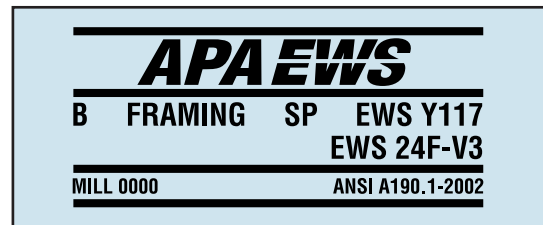
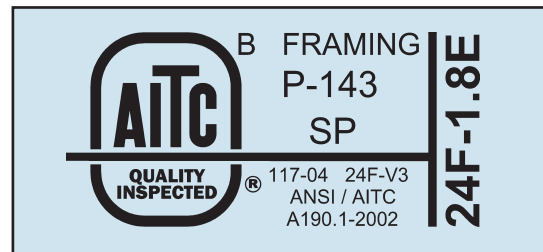
it meets the structural and appearance requirements established for the grade.

Glued laminated timber must be identified with a quality mark or trademark indicating conformance with *ANSI/AITC A190.1-2002, 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:

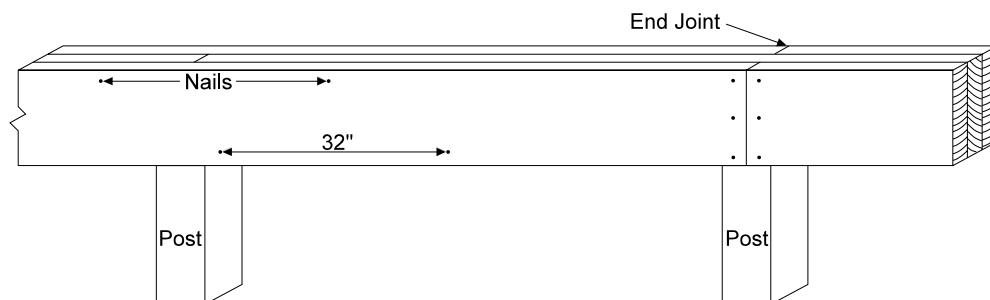


Fabricating Multiple-Member Headers and Beams

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 *AF&PA'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.

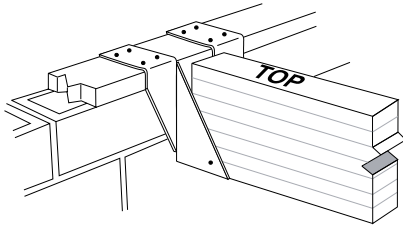
End joints of the nailed lumber should occur over the supporting column or pier. Beams and girders that are not continuous should be tied together across supports.

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.



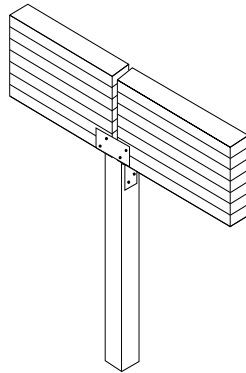
Typical Header and Beam Connections

Beam to Masonry or Concrete Wall

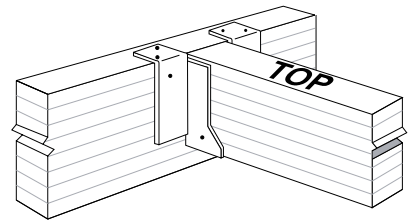


Note: Maintain 1/2" air space around the end of the wood beam.

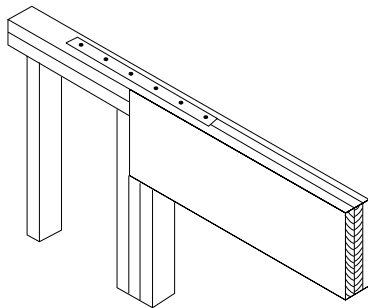
Beam to Column



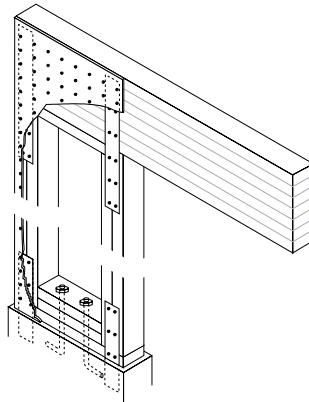
Beam to Beam



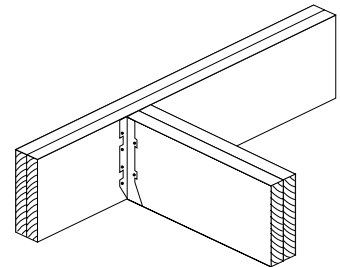
Header to Frame



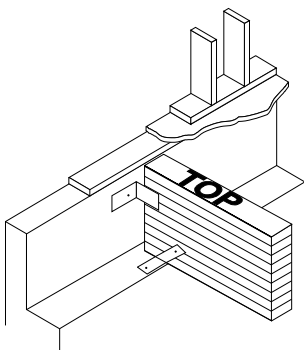
Braced Wall Detail for Garage Door Header



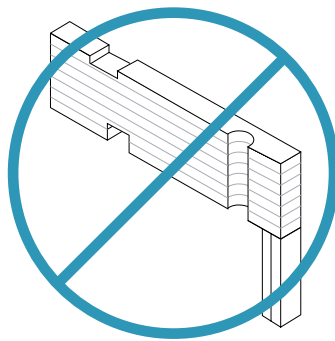
Header to Header



Beam to Concrete Wall Pocket

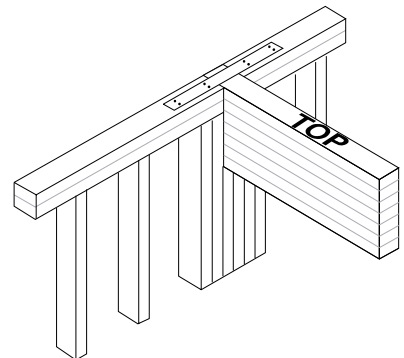


Note: Maintain 1/2" air space around the end of the wood beam. A moisture barrier between the bottom of beam and the wall is required.



Caution: Do not cut, drill or notch any 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.

SIZE SELECTION TABLES



Requirements for Use of Size Selection Tables

1. These tables are for gravity loads only. Consult a professional engineer for wind and seismic load analysis and design.
2. All tables are based on uniform load conditions. Concentrated loads 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 fabrication details.
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.

Window, Door & Garage Door Headers – One-Story

Key

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

Steps in Using These Tables:

1. Find the table with the required design loads in pounds per square foot (psf) and corresponding load duration factor.
2. Find the span of supported roof framing (i.e., span of trusses or rafters that frame into the header).
3. Find the clear opening required in feet.
4. Select the Southern Pine lumber grade, and then the number of plies and size, or the Southern Pine 24F-1.8E glued laminated timber.

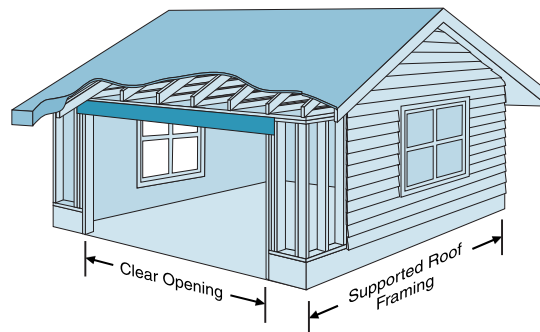


Table 1 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor

****Equivalent to a 21 psf Design Roof Snow Load**

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
No. 2	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
	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
No. 3	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
	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

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

Notes for Tables 1 through 6: Window, Door & Garage Door Headers – One-Story

- All (1) ply 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; see the *Allowable Roof Load* tables (Tables 28 or 32) to compare maximum uniform loads in pounds per lineal foot (plf).
- These tables apply to headers carrying only uniform roof loads. For headers supporting floor, roof and exterior wall loads, use the *Window, Door & Garage Door Headers – Two-Story* tables.
- For loads other than those provided in Tables 1-6, use the *Allowable Roof Load* tables with the corresponding load duration factor (Tables 25-32), or use another table in this section with a higher design load than required. For clear openings other than those provided, use the next larger clear opening shown, or use the *Allowable Roof Load* tables.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load in accordance with the *2001 Wood Frame Construction Manual*.
- The header size is based on the load transferred from 1/2 the span of the supported roof framing, plus a 24" overhang.
- Ground snow load reductions were computed in accordance with *ASCE 7-95*, Section 7.3. This reduction equation results in an equivalent design roof snow load of 0.70 times the ground snow load, with a required minimum of 20 psf. No live load reductions were taken.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

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)

Garage Door Header – One-Story Example

(See Table 6 above)

Live Load = 20 psf

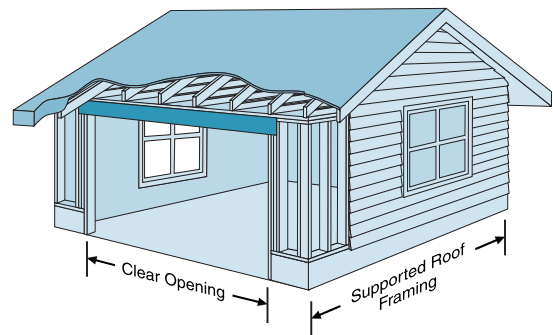
Dead Load = 20 psf

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
 24F-1.8E Southern Pine Glulam - 3-1/2" x 12-3/8"



Window, Door & Garage Door Headers – Two-Story

Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type, with the number of plies given in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E combination are shown in italics when (4) 2x12s no longer meet design conditions. 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.

Steps in Using These Tables:

1. Find the table with the required design loads in pounds per square foot (psf) and corresponding load duration factor.
2. Find the span of supported roof framing (i.e., span of trusses or rafters that frame into the header).
3. Find the clear opening required in feet.
4. Select the Southern Pine lumber grade, and then the number of plies and size, or the Southern Pine 24F-1.8E glued laminated timber.

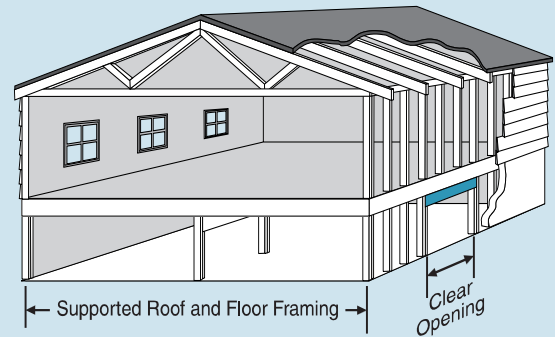


Table 7 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor

****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 through 12: Window, Door & Garage Door Headers – Two-Story

- All (1) ply 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; see the *Allowable Floor Load* tables (Table 24) to compare maximum uniform loads in pounds per lineal foot (plf).
- This table applies to headers carrying only uniform floor, roof and wall loads.
- For loads other than those provided in Tables 7-12, use the *Allowable Floor Load* tables (Tables 21-24), or use another table in this section with a higher design load than required. For clear openings other than those provided, use the next larger clear opening shown, or use the *Allowable Floor Load* tables.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load.
- 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.
- Ground snow load reductions were computed in accordance with *ASCE 7-95*, Section 7.3. This reduction equation results in an equivalent design roof snow load of 0.70 times the ground snow load, with a required minimum of 20 psf. No live load reductions were taken.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

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)

Sliding Glass Door Header – Two-Story Example

(See Table 8 on page 13)

Ground Snow Load** = 40 psf

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

Dead Load = 10 psf

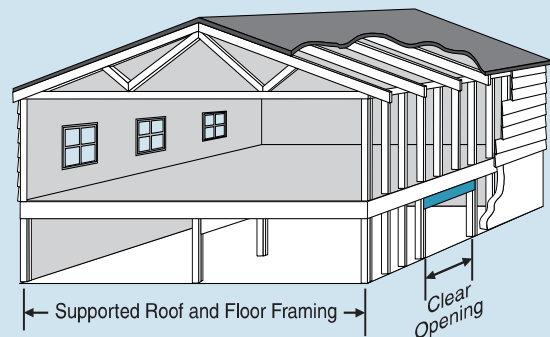
Load Duration Factor = 1.15

Span of Supported Roof Framing = 20'

Clear Opening = 12'

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

(from Table 8)



Floor Girder Beams

Key

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

Steps in Using These Tables:

1. Verify the applicability of this table's design loads in pounds per square foot (psf) and corresponding 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).
3. Find the clear opening required in feet.
4. Select the Southern Pine lumber grade, and then the number of plies and size, or the Southern Pine 24F-1.8E glued laminated timber.

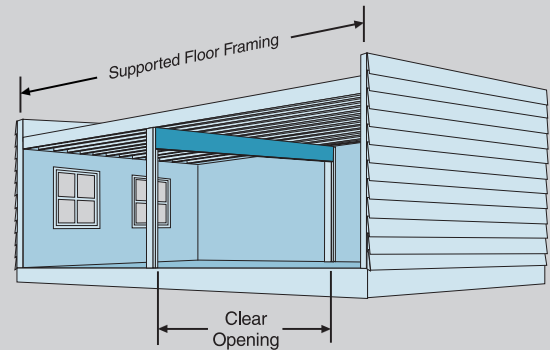


Table 13 – 40 psf Live Load, 10 psf Dead Load, 1.00 Load Duration Factor

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
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
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)

SOUTHERN PINE SIZE SELECTION TABLES

Notes for Table 13: Floor Girder Beams

- 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; see the *Allowable Floor Load* tables (Table 24) to compare maximum uniform loads in pounds per lineal foot (plf).
- This table applies to beams carrying uniform single floor loads only. For beams supporting wall or upper floor loads, use the *Allowable Floor Load* tables (Tables 21-24).
- For loads 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.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load.
- Calculations assume simple-span girders with the load transferred from simple-span joists.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

Floor Girder Beam Example

(See Table 13 on page 16)

Live Load = 40 psf

Dead Load = 10 psf

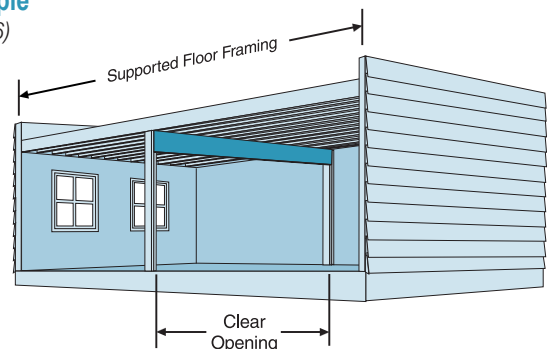
Load Duration Factor = 1.00

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

Clear Opening = 10'

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)



Notes for Table 14: Floor Edge Beams

- 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; see the *Allowable Floor Load* tables (Table 24) to compare maximum uniform loads in pounds per lineal foot (plf).
- This table applies to beams carrying uniform single floor loads only. For beams supporting roof, wall, or upper floor loads, use the *Allowable Floor Load* tables (Tables 21-24).
- For loads 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.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load.
- The beam size is based on the load transferred from 1/2 the span of the supported floor framing.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

Floor Edge Beam Example

(See Table 14 on page 18)

Live Load = 40 psf

Dead Load = 10 psf

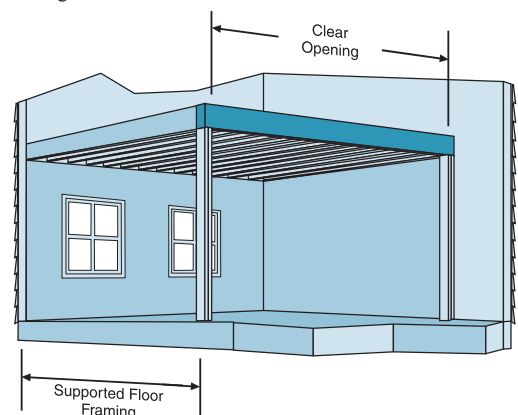
Load Duration Factor = 1.00

Span of Supported Floor Framing = 20'

Clear Opening = 12'

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)



Floor Edge Beams

Key

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

Steps in Using These Tables:

1. Verify the applicability of this table's design loads in pounds per square foot (psf) and corresponding load duration factor.
2. Find the span of supported floor framing (i.e., span of joists or trusses that frame into the beam).
3. Find the clear opening required in feet.
4. Select the Southern Pine lumber grade, and then the number of plies and size, or the Southern Pine 24F-1.8E glued laminated timber.

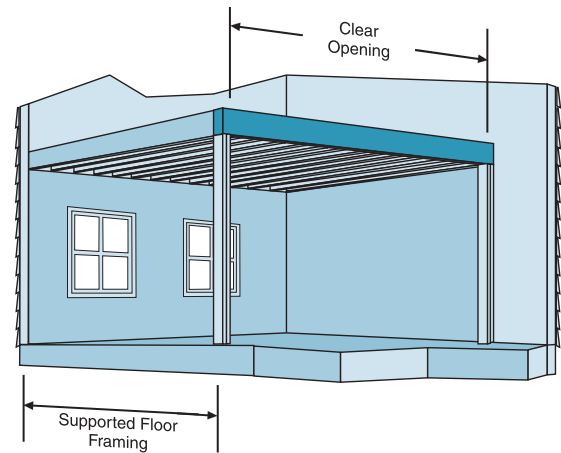


Table 14 – 40 psf Live Load, 10 psf Dead Load, 1.00 Load Duration Factor

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
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
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)

Roof Ridge Beams

Key

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type, with the number of plies given in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.8E combination are shown in italics when (4) 2x12s no longer meet design conditions. 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 Roof Load* tables.

Steps in Using These Tables:

1. Find the table with the required design loads in pounds per square foot (psf) and corresponding load duration factor.
2. Find the span of supported roof framing (i.e., sum of the spans of the rafters or trusses that frame into the beam).
3. Find the clear opening required in feet.
4. Select the Southern Pine lumber grade, and then the number of plies and size, or the Southern Pine 24F-1.8E glued laminated timber.

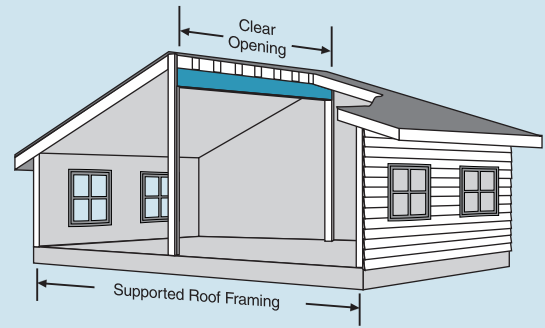


Table 15 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor
****Equivalent to a 21 psf Design Roof Snow Load**

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 through 20: Roof Ridge Beams

- 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; see the *Allowable Roof Load* tables (Table 28 or 32) to compare maximum uniform loads in pounds per lineal foot (plf).
- These tables apply to beams carrying only uniform roof loads.
- For loads other than those provided in Tables 15-20, use the *Allowable Roof Load* tables with the corresponding load duration factor (Tables 25-32), or use another table in this section with a higher design load than required. For clear openings other than those provided, use the next larger clear opening shown, or use the *Allowable Roof Load* tables.
- Deflection is limited to $\ell/180$ for total load and $\ell/240$ for live load.
- Calculations assume the worst case of simple- or continuous-span glued laminated timber, but only simple-span Southern Pine lumber beams.
- The beam size is based on the load transferred from 1/2 the span of the supported roof framing.
- Ground snow load reductions were computed in accordance with *ASCE 7-95*, Section 7.3. This reduction equation results in an equivalent design roof snow load of 0.70 times the ground snow load, with a required minimum of 20 psf. No live load reductions were taken.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

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 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. 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)

Roof Ridge Beam Example

(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

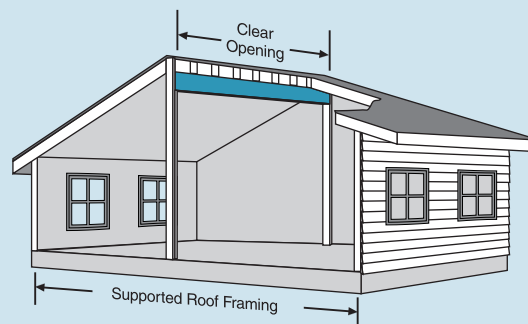
Span of Supported Roof Framing = 14' + 14' = 28'

Clear Opening = 14'

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"



ALLOWABLE LOAD TABLES



Requirements for Use of Allowable Load Tables

1. These tables are for gravity loads only. Consult a professional engineer for wind and seismic load analysis and design.
2. All tables are based on uniform load conditions. Concentrated loads 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 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 fabrication details.
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.

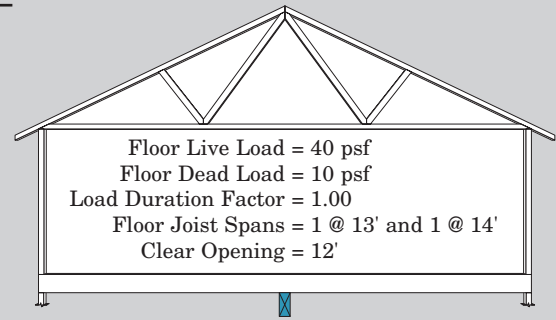
Allowable Floor Loads (plf) - 1.00 Load Duration Factor

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

- Row 1: Maximum Total Load (TL*) with deflection limited to $\ell/240$
- Row 2: Maximum Live Load (LL*) with deflection limited to $\ell/360$
- Row 3: Required Bearing Length (BL*) in trimmer thicknesses (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.)

Steps in Sizing Headers or Beams:

1. Determine the total load (live load + dead load) on the beam in plf (pounds per lineal foot).
2. Determine the live load in plf.
3. Find the clear opening that is the same or greater than required.
4. From the clear opening rows selected, find the plf load that meets or exceeds the required plf load for total load (Row 1) and live load (Row 2). The required bearing length in inches is given in Row 3.
5. The beam size is found at the top of the column of the selected cell that meets all of your conditions.
6. If the beam selected is too deep or the bearing length too long, continue in the selected row to find another possibility.



$$\text{Total Load} = (13'/2 + 14'/2) \times (40 + 10) \text{ psf} = 675 \text{ plf}$$

$$\text{Live Load} = (13'/2 + 14'/2) \times 40 \text{ psf} = 540 \text{ plf}$$

Find the three rows for the 12' clear opening. Find a total load greater than 675 plf ((4) 2x12s No.1) in Row 1. Find a live load greater than 540 plf ((3) 2x12s No.1 or (4) 2x10s No.1) in Row 2. Select the larger of the sizes from the total load and live load rows: (4) 2x12s No.1 with a minimum 1.5" (1 trimmer) of bearing from Row 3. A 3-1/2" x 11" glulam beam with a minimum 3.0" (2 trimmers) of bearing may also be used.

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 through 24: Allowable Floor Loads (plf) - 1.00 Load Duration Factor

- Values provided are the maximum uniform loads in pounds per lineal foot (plf) that can be applied to the beam in addition to its own weight. Allowable plf loads are based on the minimum bearing length required to carry the load. This required bearing length is then converted to the least number of 1.5"-wide trimmers that can be used.
- Interpolation between clear openings is permitted.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load. For a live load deflection limit of $\ell/480$, multiply the maximum live load numbers (Row 2 for each clear opening) by 0.75. The result must not exceed the total load.
- Design span is assumed to be the clear opening plus 1/2 the actual required bearing length at each end.
- The bearing lengths show the number of trimmers required at each end of the header or beam based on the maximum plf loads. Shorter bearing lengths may be required with lighter loads, and longer bearing lengths may be required because of the material the header or beam is bearing on.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

Table 22 – 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	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-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	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								5-1/2" Width									
		Depth (in.)								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, and Key, Example and Notes on page 24)

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

- For practicality, no values are shown in the table when the calculated values exceeded 3000 and 6000 plf for the 3-1/2" and 5-1/2"-wide beams, respectively, or when the span-to-depth ratio exceeded 30.
- For members having a net width of 3" or 3-1/8", multiply the tabulated 3-1/2" net-width numbers in Rows 1 and 2 for each clear opening by 0.857 or 0.893, respectively. Then check the required bearing length in Row 3.
- For members having a net width of 5" or 5-1/8", multiply the tabulated 5-1/2" net-width numbers in Rows 1 and 2 for each clear opening by 0.909 or 0.932, respectively. Then check the required bearing length in Row 3.

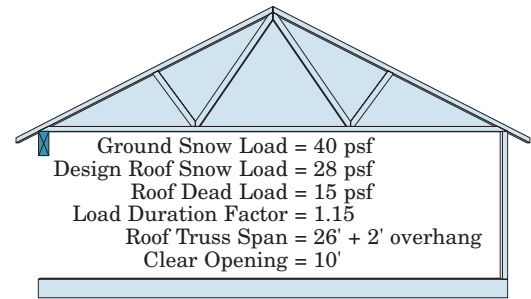
Allowable Roof Loads (plf) – 1.15 Load Duration Factor

Key – for each clear opening there are three numbers:

- Row 1: Maximum Total Load (TL*) with deflection limited to $\ell/240$
 Row 2: Maximum Live Load (LL*) with deflection limited to $\ell/360$
 Row 3: Required Bearing Length (BL*) in trimmer thicknesses
 (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.)

Steps in Sizing Headers or Beams:

1. Determine the total load (live load + dead load) on the beam in plf (pounds per lineal foot).
2. Determine the live load in plf.
3. Find the clear opening that is the same or greater than required.
4. From the clear opening rows selected, find the plf load that meets or exceeds the required plf load for total load (Row 1) and live load (Row 2). The required bearing length in inches is given in Row 3.
5. The beam size is found at the top of the column of the selected cell that meets all of your conditions.
6. If the beam selected is too deep or the bearing length too long, continue in the selected row to find another possibility.



$$\text{Total Load} = (26'/2 + 2') \times (28 + 15) \text{ psf} = 645 \text{ plf}$$

$$\text{Live Load} = (26'/2 + 2') \times 28 \text{ psf} = 420 \text{ plf}$$

Find the three rows for the 10' clear opening. Find a total load greater than 645 plf ((3) 2x10s No.1 or (3) 2x12s No.2) in Row 1. Find a live load greater than 420 plf ((2) 2x12s No.1 or (2) 2x12s No.2) in Row 2. Select the larger of the sizes from the total load and live load rows for the grade desired: (3) 2x12s No.2 with a minimum 3.0" (2 trimmers) of bearing from Row 3. A 3-1/2" x 9-5/8" glulam beam with a minimum 3.0" (2 trimmers) of bearing may also be used.

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 through 28: Allowable Roof Loads (plf) - 1.15 Load Duration Factor

- Values provided are the maximum uniform loads in pounds per lineal foot (plf) that can be applied to the beam in addition to its own weight. Allowable plf loads are based on the minimum bearing length required to carry the load. This required bearing length is then converted to the least number of 1.5"-wide trimmers that can be used.
- Interpolation between clear openings is permitted.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load in accordance with the 2001 Wood Frame Construction Manual.
- Design span is assumed to be the clear opening plus 1/2 the actual required bearing length at each end.
- The bearing lengths show the number of trimmers required at each end of the header or beam based on the maximum plf loads. Shorter bearing lengths may be required with lighter loads, and longer bearing lengths may be required because of the material the header or beam is bearing on.
- See the Assumptions for Table Development text beginning on page 2 for the basis of the calculations used to generate these tables.

Table 26 – 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	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-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	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)

Table 28 – 24F-1.8E Southern Pine Glued Laminated Timber																			
Clear Opening	*	3-1/2" Width								5-1/2" Width									
		Depth (in.)								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, and Key, Example and Notes on page 27)

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

- For practicality, no values are shown in the table when the calculated values exceeded 3000 and 6000 plf for the 3-1/2" and 5-1/2"-wide beams, respectively, or when the span-to-depth ratio exceeded 30.
- For members having a net width of 3" or 3-1/8", multiply the tabulated 3-1/2" net-width numbers in Rows 1 and 2 for each clear opening by 0.857 or 0.893, respectively. Then check the required bearing length in Row 3.
- For members having a net width of 5" or 5-1/8", multiply the tabulated 5-1/2" net-width numbers in Rows 1 and 2 for each clear opening by 0.909 or 0.932, respectively. Then check the required bearing length in Row 3.

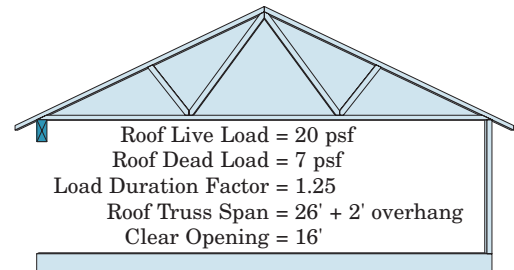
Allowable Roof Loads (plf) – 1.25 Load Duration Factor

Key – for each clear opening there are three numbers:

- Row 1: Maximum Total Load (TL*) with deflection limited to $\ell/240$
 Row 2: Maximum Live Load (LL*) with deflection limited to $\ell/360$
 Row 3: Required Bearing Length (BL*) in trimmer thicknesses
 (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.)

Steps in Sizing Headers or Beams:

1. Determine the total load (live load + dead load) on the beam in plf (pounds per lineal foot).
2. Determine the live load in plf.
3. Find the clear opening that is the same or greater than required.
4. From the clear opening rows selected, find the plf load that meets or exceeds the required plf load for total load (Row 1) and live load (Row 2). The required bearing length in inches is given in Row 3.
5. The beam size is found at the top of the column of the selected cell that meets all of your conditions.
6. If the beam selected is too deep or the bearing length too long, continue in the selected row to find another possibility.



$$\text{Total Load} = (26'/2 + 2') \times (20 + 7) \text{ psf} = 405 \text{ plf}$$

$$\text{Live Load} = (26'/2 + 2') \times 20 \text{ psf} = 300 \text{ plf}$$

Find the three rows for the 16' clear opening. Find a total load greater than 405 plf ((3) 2x12s No.1 or (4) 2x12s No.2) in Row 1. Find a live load greater than 300 plf ((3) 2x12s No.1 or (3) 2x12s No.2) in Row 2. Select the larger of the sizes from the total load and live load rows for the grade desired: (3) 2x12s No.1 with a minimum 1.5" (1 trimmer) of bearing from Row 3. A 3-1/2" x 12-3/8" or a 5-1/2" x 11" glulam beam with a minimum 3.0" (2 trimmers) or 1.5" (1 trimmer) of bearing respectively, may also be used.

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 through 32: Allowable Roof Loads (plf) - 1.25 Load Duration Factor

- Values provided are the maximum uniform loads in pounds per lineal foot (plf) that can be applied to the beam in addition to its own weight. Allowable plf loads are based on the minimum bearing length required to carry the load. This required bearing length is then converted to the least number of 1.5"-wide trimmers that can be used.
- Interpolation between clear openings is permitted.
- Deflection is limited to $\ell/240$ for total load and $\ell/360$ for live load in accordance with the 2001 Wood Frame Construction Manual.
- Design span is assumed to be the clear opening plus 1/2 the actual required bearing length at each end.
- The bearing lengths show the number of trimmers required at each end of the header or beam based on the maximum plf loads. Shorter bearing lengths may be required with lighter loads, and longer bearing lengths may be required because of the material the header or beam is bearing on.
- See the *Assumptions for Table Development* text beginning on page 2 for the basis of the calculations used to generate these tables.

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								5-1/2" Width										
		Depth (in.)								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, and Key, Example and Notes on page 30)

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

- For practicality, no values are shown in the table when the calculated values exceeded 3000 and 6000 plf for the 3-1/2" and 5-1/2"-wide beams, respectively, or when the span-to-depth ratio exceeded 30.
- For members having a net width of 3" or 3-1/8", multiply the tabulated 3-1/2" net-width numbers in Rows 1 and 2 for each clear opening by 0.857 or 0.893, respectively. Then check the required bearing length in Row 3.
- For members having a net width of 5" or 5-1/8", multiply the tabulated 5-1/2" net-width numbers in Rows 1 and 2 for each clear opening by 0.909 or 0.932, respectively. Then check the required bearing length in Row 3.



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An Environmental Asset

Wood products have so many cost and construction advantages over other building materials that it is easy to forget what an environmental asset it is to use wood.

We sometimes forget that wood is naturally reusable, recyclable, and biodegradable. Or the best insulator of all structural building materials, thus conserving finite fossil fuels and coal by requiring less energy to heat and cool a home built with wood. Or that it takes far less energy to transform trees into wood products than it does to manufacture steel, aluminum, masonry, or plastic products. Less pollution of the air and water, too.

Wood is also renewable. Ores and petroleum used for non-wood products, once used, are not renewable. They are gone forever.

Trees, however, *are* forever. The United States has some of the best tree-growing land in the world, and billions of trees are planted each year to sustain the forest. More wood is grown each year in the U.S. than is harvested or lost to disease, insects, and fire. America has more trees today than it had 75 years ago. About a third of the entire United States – 747 million acres – is covered with trees. This amount of forestland is two-thirds of what existed in pre-Columbian America some 500 years ago.

Finally, remember that a growing forest removes the greenhouse gas carbon dioxide, while giving off life-sustaining oxygen. Can you think of a better environmental exchange than that?



P.O. Box 641700 Kenner, LA 70064-1700
504/443-4464 • FAX 504/443-6612
info@southernpine.com

www.southernpine.com