Foreword

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

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

The Southern Pine lumber reference design values used in developing the tables in this brochure are design values that became effective June 1, 2013; they are from SPIB Standard Grading Rules for Southern Pine Lumber, 2014 Edition, published by the Southern Pine Inspection Bureau (SPIB). The glued laminated timber design values are from ANSI 117, Standard Specifications for Structural Glued Laminated Timber of Softwood Species, and Glulam Layup Combinations published by APA -The Engineered Wood Association. The design values have been adjusted according to the National Design Specification® for Wood Construction (NDS®), published by the American Wood Council (AWC). Beam sizes or allowable load capacities have been determined using standard engineering formulas for beams supporting uniformly distributed loads. Values tabulated represent the most limiting of four design parameters – bending (flexure), deflection, compression perpendicular-to-grain and shear parallel-to-grain (horizontal shear).

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

Contents

Building with Wood ................................. 1
Index to Tables ................................. 1
Southern Pine Advantages ................................. 2
Assumptions for Table Development ......................... 2
Identification ............................................. 5
Fabricating Multiple-Member Headers and Beams ............. 5
Typical Connections ........................................ 6
Size Selection Tables ....................................... 7
Window, Door & Garage Door Headers –
  Supporting Roof Loads Only ......................... 8
Window, Door & Garage Door Headers –
  Supporting Roof, Wall & Floor Loads .................. 12
Floor Girder Beams ..................................... 16
Floor Edge Beams ....................................... 18
Roof Ridge Beams .................................... 19
Allowable Load Tables ......................... 23
Allowable Floor Loads ..................................... 24
Allowable Roof Loads ................................... 29
Why Wood? ............................................. 31
Additional Resources .................................. Back Cover

Southern Forest Products Association does not develop design values for either lumber or glued laminated timber. Accordingly, SFPA 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, SFPA and its 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.

The information in this publication is based upon design values for visually graded Southern Pine dimension lumber that became effective June 1, 2013.

Southern Forest Products Association
6660 Riverside Drive, Suite 212 • Metairie, LA 70003
504/443-4464 • FAX: 504/443-6612
mail@sfpa.org

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

SouthernPine.com

Copyright © 2013, Southern Forest Products Association. All rights reserved.
Building with Wood

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

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

Index to Allowable Load Tables

<table>
<thead>
<tr>
<th>Table Number</th>
<th>Grade</th>
<th>Total Load Deflection Limit (in.)</th>
<th>Live Load Deflection Limit (in.)</th>
<th>Load Duration Factor, C_D</th>
<th>See Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable Floor Loads (psf)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>No.1</td>
<td>240</td>
<td>360</td>
<td>1.00</td>
<td>24</td>
</tr>
<tr>
<td>22</td>
<td>No.2</td>
<td>240</td>
<td>360</td>
<td>1.00</td>
<td>25</td>
</tr>
<tr>
<td>23</td>
<td>No.3</td>
<td>240</td>
<td>360</td>
<td>1.00</td>
<td>25</td>
</tr>
<tr>
<td>24</td>
<td>24F-1.7E</td>
<td>240</td>
<td>360</td>
<td>1.00</td>
<td>26</td>
</tr>
<tr>
<td>25</td>
<td>24F-1.7E</td>
<td>240</td>
<td>360</td>
<td>1.00</td>
<td>27</td>
</tr>
<tr>
<td>26</td>
<td>24F-1.8E</td>
<td>240</td>
<td>360</td>
<td>1.00</td>
<td>28</td>
</tr>
<tr>
<td>Allowable Roof Loads (psf)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>No.1</td>
<td>180</td>
<td>240</td>
<td>1.15</td>
<td>29</td>
</tr>
<tr>
<td>28</td>
<td>No.2</td>
<td>180</td>
<td>240</td>
<td>1.15</td>
<td>30</td>
</tr>
<tr>
<td>29</td>
<td>No.3</td>
<td>180</td>
<td>240</td>
<td>1.15</td>
<td>30</td>
</tr>
<tr>
<td>30</td>
<td>24F-1.7E</td>
<td>180</td>
<td>240</td>
<td>1.15</td>
<td>31</td>
</tr>
<tr>
<td>31</td>
<td>24F-1.7E</td>
<td>180</td>
<td>240</td>
<td>1.15</td>
<td>32</td>
</tr>
<tr>
<td>32</td>
<td>24F-1.8E</td>
<td>180</td>
<td>240</td>
<td>1.15</td>
<td>33</td>
</tr>
<tr>
<td>33</td>
<td>No.1</td>
<td>180</td>
<td>240</td>
<td>1.25</td>
<td>34</td>
</tr>
<tr>
<td>34</td>
<td>No.2</td>
<td>180</td>
<td>240</td>
<td>1.25</td>
<td>35</td>
</tr>
<tr>
<td>35</td>
<td>No.3</td>
<td>180</td>
<td>240</td>
<td>1.25</td>
<td>35</td>
</tr>
<tr>
<td>36</td>
<td>24F-1.7E</td>
<td>180</td>
<td>240</td>
<td>1.25</td>
<td>36</td>
</tr>
<tr>
<td>37</td>
<td>24F-1.7E</td>
<td>180</td>
<td>240</td>
<td>1.25</td>
<td>37</td>
</tr>
<tr>
<td>38</td>
<td>24F-1.8E</td>
<td>180</td>
<td>240</td>
<td>1.25</td>
<td>38</td>
</tr>
</tbody>
</table>

CONSUMPTION OF FOSSIL FUELS (MJ/FT²) ASSOCIATED WITH THREE FLOOR DESIGNS

<table>
<thead>
<tr>
<th>Material</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wood Floor</td>
<td>9.93</td>
</tr>
<tr>
<td>Concrete Floor</td>
<td>24.75</td>
</tr>
<tr>
<td>Steel Floor</td>
<td>48.32</td>
</tr>
</tbody>
</table>

Note:
One megajoule (MJ) is equivalent to 0.27778 kilowatt hours or 947.8 BTUs.
Source: Consortium for Research on Renewable Industrial Materials (CORMI)
Southern Pine Advantages

- Dependable structural species for engineered and framing applications
- High density provides excellent fastener strength
- Cost-competitive choice
- Accepted by 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 are provided with the number of pieces (plies) required shown in parentheses (e.g. (3) 2x10s). For the Size Selection Tables, Southern Pine glued laminated timber sizes are only provided in the header tables (Tables 1-12) when (3) 2x12s no longer meet design parameters, and in the beam tables (Tables 13-20) when (4) 2x12s no longer meet design parameters.

General Requirements

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

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

Loading Conditions

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

The headers and beams in the snow load Size Selection Tables (Tables 1-4, 7-10 and 15-18) have been sized using the Design Roof Snow Load shown in the subheading for each table. The Design Roof Snow Load has been derived by reducing the Ground Snow Load listed in each table heading in accordance with the provisions of Section 7.3 in ASCE 7-10, Minimum Design Loads for Buildings and Other Structures. This reduction results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot), when using the following factors:

- Exposure Factor, $C_e = 1.0$
- Thermal Factor, $C_t = 1.0$
- Importance Factor, $I = 1.0$

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

Glued Laminated Timber

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

The majority of stock glued laminated timber is manufactured with camber, but some stock members – especially balanced layup combinations – are manufactured without camber.

For more information about glued laminated timber, contact APA – The Engineered Wood Association at www.apawood.org, or West Coast Lumber Inspection Bureau at www.wclib.org.
Grades and Sizes

The Southern Pine lumber headers and beams have been determined using No.1, No.2 and No.3 grades, and net lumber dimensions (actual sizes), provided by the American Softwood Lumber Standard PS 20 as follows:

<table>
<thead>
<tr>
<th>Nominal Size (in.)</th>
<th>Actual Size (in.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 6</td>
<td>1-1/2 x 5-1/2</td>
</tr>
<tr>
<td>2 x 8</td>
<td>1-1/2 x 7-1/4</td>
</tr>
<tr>
<td>2 x 10</td>
<td>1-1/2 x 9-1/4</td>
</tr>
<tr>
<td>2 x 12</td>
<td>1-1/2 x 11-1/4</td>
</tr>
</tbody>
</table>

The Southern Pine glued laminated timber and lumber grades included in this publication. The glued laminated timber values are from ANSI I17 and APA EWS Y117. The Southern Pine lumber values are design values that became effective June 1, 2013 from the SPIB Grading Rules.

<table>
<thead>
<tr>
<th>Southern Pine Glued Laminated Timber and Lumber Reference Design Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

*Used \( F_v = 175 \text{ psi} \) for 3-1/8” and 3-1/2”-wide glulam, and 140 psi for 5-1/8” and 5-1/2”-wide glulam.

Adjustment Factors

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

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

Load Duration Factor, \( C_D \) – Wood has the property of carrying substantially greater maximum loads for short durations than for long durations of loading. The following load duration factors have been used to adjust the reference design values for bending and shear.

<table>
<thead>
<tr>
<th>Load Duration</th>
<th>( C_D )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ten years (occupancy live load)</td>
<td>1.00</td>
</tr>
<tr>
<td>Two months (snow load)</td>
<td>1.15</td>
</tr>
<tr>
<td>Seven days (construction load)</td>
<td>1.25</td>
</tr>
</tbody>
</table>

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

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

\[
C_V = \left( \frac{5.125}{b} \right)^{1/20} \left( \frac{12d}{L} \right)^{1/20} \leq 1.0, \text{ where:}
\]

\( b \) = 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

Spans

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

Values in these tables have been limited to the minimum number calculated for the following four design parameters:

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

Reference Design Values

The following table lists reference design values in pounds per square inch (psi) for Southern Pine glued laminated timber and lumber grades included in this publication.
**Bending**

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

**Deflection**

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

<table>
<thead>
<tr>
<th>Tables</th>
<th>Total Load</th>
<th>Live Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-6: Headers</td>
<td>$L/180$</td>
<td>$L/240$</td>
</tr>
<tr>
<td>7-12: Headers</td>
<td>$L/240$</td>
<td>$L/360$</td>
</tr>
<tr>
<td>13-14: Floor Beams</td>
<td>$L/240$</td>
<td>$L/360$</td>
</tr>
<tr>
<td>15-20: Roof Beams</td>
<td>$L/180$</td>
<td>$L/240$</td>
</tr>
<tr>
<td>21-26: Allowable Floor Loads</td>
<td>$L/240$</td>
<td>$L/360$</td>
</tr>
<tr>
<td>27-38: Allowable Roof Loads</td>
<td>$L/180$</td>
<td>$L/240$</td>
</tr>
</tbody>
</table>

The Allowable Load Tables (Tables 21-38) may be used to calculate allowable live loads based on different deflection limits. For example, to determine allowable live loads for a deflection limit of $L/360$ in the Allowable Roof Load Tables (Tables 27-38), multiply the tabulated live-load (LL) values by the ratio of $240/360 = 0.67$. The result must not exceed the corresponding total-load (TL) value for the same clear opening and product.

**Compression Perpendicular-to-Grain**

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

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

**Shear Parallel-to-Grain**

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

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

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

Typical Lumber Grade Marks:

Typical Glued Laminated Timber Marks:

Fabricating Multiple-Member Headers and Beams

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

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

A nominal 1/2” (15/32”) wood structural panel filler is often used to fill out two plies of a nominal 2”-thick lumber header to match a 3-1/2” wall width.

*Beam continuity is maintained by staggering end joints of adjacent plies.
<table>
<thead>
<tr>
<th>Connection Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam to Masonry or Concrete Wall</td>
<td>Maintain 1/2” air space around the end of the wood beam.</td>
</tr>
<tr>
<td>Beam to Column</td>
<td></td>
</tr>
<tr>
<td>Beam to Beam</td>
<td></td>
</tr>
<tr>
<td>Header to Frame</td>
<td>Note: Building codes may require detailed bracing for wall sections less than 4' in length adjacent to garage door openings.</td>
</tr>
<tr>
<td>Braced Wall Detail for Garage Door Header</td>
<td>Note: Maintain 1/2” air space around the end of the wood beam.</td>
</tr>
<tr>
<td>Header to Header</td>
<td>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.</td>
</tr>
<tr>
<td>Beam to Concrete Wall Pocket</td>
<td>Note: Maintain 1/2” air space between the end of the wood beam and the concrete wall. A moisture barrier is required between the bottom of the beam and the concrete wall.</td>
</tr>
<tr>
<td>Beam Bearing on Trimmers Inside Wall Framing</td>
<td>Caution: Do not cut, drill or notch headers or beams.</td>
</tr>
</tbody>
</table>

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.
Requirements for Use of Size Selection Tables

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

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

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

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

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

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

7. These tables assume unbalanced glued laminated timber combinations used in simple-span applications. Balanced beam combinations with equal or greater design values may be substituted and used in either simple-span or continuous-span applications.

8. These tables are only applicable to members used under ordinary ranges of temperature and occasionally heated in use up to 150° F.
Key
Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.7E (V4) stress class are provided in italics when (3) 2x12s no longer meet design parameters. A 3.0” bearing length is assumed. For other bearing lengths, use the appropriate Allowable Roof Load Table (Tables 27-38).

Steps for Using Tables 1-6:
1. Select the table with loading conditions and load duration factor satisfying the intended application.
2. Find the span of supported roof framing (i.e. span of trusses or rafters that frame into the header) that equals or exceeds the intended application.
3. Find the clear opening that equals or exceeds the intended application.
4. Select product size for the appropriate grade, clear opening and span of supported roof framing.

### 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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td>(1) 2 x 6</td>
<td>(1) 2 x 8</td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 6</td>
<td>(1) 2 x 8</td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 10</td>
</tr>
<tr>
<td>8'</td>
<td>(1) 2 x 12</td>
<td>(2) x 10s</td>
</tr>
<tr>
<td>9'</td>
<td>(2) x 10s</td>
<td>(2) x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(2) x 12s</td>
<td>(2) x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>(2) x 12s</td>
<td>(3) x 10s</td>
</tr>
<tr>
<td>16'</td>
<td>(3) x 12s</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-7/8</td>
</tr>
</tbody>
</table>

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

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

- Tables 1-6 apply to headers carrying only uniformly distributed roof loads. For headers supporting uniformly distributed floor, roof and exterior wall loads, use the appropriate table for Window, Door & Garage Door Headers – Supporting Roof, Wall & Floor Loads (Tables 7-12).
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Header size is based on the load transferred from 1/2 the span of the supported roof framing, plus a 24” overhang.
- Deflection is limited to 1/180 for total load and 1/240 for live load.
- Design Roof Snow Loads have been derived by reducing Ground Snow Loads in accordance with ASCE 7-10, Section 7.3. This results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot). Unbalanced snow loads, drifting or rain-on-snow surcharges have not been considered. Roof live load reductions have not been taken.
- For loading conditions other than those provided in Tables 1-6, use another table in this section with higher loading conditions than required, or use the Allowable Roof Load Table with the corresponding load duration factor (Tables 27-38). For clear openings other than those provided, use the next larger clear opening shown, or use the appropriate Allowable Roof Load Table.
- All (1) ply lumber headers may be replaced with (2) 2x8s of the same or better grade.
- Tabulated glued laminated timber sizes may be replaced with other glued laminated timber sizes and/or stress classes with equal or greater load capacity (plf); refer to the appropriate Allowable Roof Load Tables (Tables 30-32 or 36-38) to determine acceptable options.
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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>16'</td>
</tr>
<tr>
<td>No. 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 8</td>
<td></td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 10</td>
<td></td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>9'</td>
<td>(2) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>10'</td>
<td>(2) 2 x 12s</td>
<td></td>
</tr>
<tr>
<td>12'</td>
<td>(3) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>No. 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 10</td>
<td></td>
</tr>
<tr>
<td>6'</td>
<td>(2) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td></td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 12s</td>
<td></td>
</tr>
<tr>
<td>10'</td>
<td>3-1/2 x 9-1/4</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 9-1/4</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>16'</td>
</tr>
<tr>
<td>No. 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 8</td>
<td></td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 10</td>
<td></td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>9'</td>
<td>(2) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>10'</td>
<td>(2) 2 x 12s</td>
<td></td>
</tr>
<tr>
<td>12'</td>
<td>(3) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>No. 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 8</td>
<td></td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 12</td>
<td></td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td></td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td></td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 9-1/4</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 10</td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 12</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 9-1/2</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 6</td>
<td>(1) 2 x 6</td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 10</td>
</tr>
<tr>
<td>8'</td>
<td>(1) 2 x 12</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>9'</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>16'</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>18'</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>16'</th>
<th>20'</th>
<th>24'</th>
<th>28'</th>
<th>32'</th>
<th>36'</th>
<th>40'</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'</td>
<td>(1) 2 x 6</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 10</td>
<td>(1) 2 x 10</td>
<td>(1) 2 x 10</td>
</tr>
<tr>
<td>6'</td>
<td>(1) 2 x 10</td>
<td>(1) 2 x 12</td>
<td>(1) 2 x 12</td>
<td>(1) 2 x 12</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 8s</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 10s</td>
</tr>
<tr>
<td>9'</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/2</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
</tbody>
</table>

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

### EXAMPLE: Garage Door Header – Supporting Roof Loads Only

(See Table 5 on page 10)

**Live Load = 20 psf**

**Dead Load = 10 psf**

**Load Duration Factor = 1.25**

**Span of Supported Roof Framing = 24’**

**Clear Opening = 10’**

Southern Pine Header Selected: No.1 Southern Pine Lumber - (2) 2x12s or No.2 Southern Pine Lumber - (3) 2x10s or 24F-1.7E (V4) Southern Pine Glulam - 3-1/2” x 9-1/4”

**Note:** Detailed bracing may be required for wall sections less than 4’ in length adjacent to garage door openings. Refer to the Braced Wall Detail for Garage Door Header illustration on page 6.
Key
Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.7E (V4) stress class are provided in italics when (3) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed, except for the sizes marked with an asterisk (*) which require a 4.5" bearing length. For other bearing lengths, use the Allowable Floor Load tables (Tables 21-26).

Steps for Using Tables 7-12:
1. Select the table with loading conditions and load duration factor satisfying the intended application.
2. Find the span of supported roof and floor framing that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported roof and floor framing.

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof &amp; Floor Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td></td>
</tr>
<tr>
<td>No. 1</td>
<td>(1) 2 x 8</td>
<td>(2) 2 x 10</td>
</tr>
<tr>
<td></td>
<td>16'</td>
<td></td>
</tr>
<tr>
<td>No. 2</td>
<td>(1) 2 x 10</td>
<td>(2) 2 x 10</td>
</tr>
<tr>
<td></td>
<td>16'</td>
<td></td>
</tr>
<tr>
<td>No. 3</td>
<td>(1) 2 x 8</td>
<td>(2) 2 x 10</td>
</tr>
</tbody>
</table>

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

Notes for Tables 7 - 12: Window, Door & Garage Door Headers – Supporting Roof, Wall & Floor Loads
- Tables 7-12 apply to headers carrying only uniformly distributed roof, wall and floor loads.
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Header size is based on the load transferred from 1/2 the span of the supported roof framing plus a 24" overhang, plus 1/4 the span of the floor framing, plus the wall load. The floor load is assumed to be 40 psf live load and 10 psf dead load. The wall load is assumed to be 100 psf (pounds per lineal foot) dead load.
- Deflection is limited to £240 for total load and £360 for live load.
- Design Roof Load Tables have been derived by reducing Ground Snow Loads in accordance with ASCE 7-10, Section 7.3. This results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot). Unbalanced snow loads, drifting or rain-on-snow surcharges have not been considered. Roof live load reductions have not been taken.
- For loading conditions other than those provided in Tables 7-12, use another table in this section with higher loading conditions than required, or use the Allowable Floor Load Tables (Tables 21-26). For clear openings other than those provided, use the next larger clear opening shown, or use the Allowable Floor Load Tables.
- All (1) ply lumber headers may be replaced with (2) 2x8s of the same or better grade.
- Tabulated glued laminated timber sizes may be replaced with other glued laminated timber sizes and/or stress classes with equal or greater load capacity (pfd); refer to the appropriate Allowable Floor Load Tables (Tables 24-26) to determine acceptable options.
### 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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof &amp; Floor Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 10</td>
<td>(1) 2 x 12</td>
</tr>
<tr>
<td>6'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12</td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 16</td>
<td>3-1/2 x 18</td>
</tr>
</tbody>
</table>

### 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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof &amp; Floor Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 10</td>
<td>(1) 2 x 12</td>
</tr>
<tr>
<td>6'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12</td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 16</td>
<td>3-1/2 x 18</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 7, Key (*) and Notes on page 12, and Example on page 15)
<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof &amp; Flooring</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>4’ 16’</td>
<td>16’ 3-1/2 x 14 (1) 2 x 12</td>
</tr>
<tr>
<td></td>
<td>20’</td>
<td>20’ 3-1/2 x 16 (3) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>24’</td>
<td>24’ 3-1/2 x 18 (4) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>28’</td>
<td>28’ 3-1/2 x 18 (4) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>32’</td>
<td>32’ 3-1/2 x 18 (4) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>36’</td>
<td>36’ 3-1/2 x 18 (4) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>40’</td>
<td>40’ 3-1/2 x 18 (4) 2 x 12s</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof &amp; Floor Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td><strong>No. 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 8</td>
<td>(1) 2 x 10</td>
</tr>
<tr>
<td>6'</td>
<td>(2) 2 x 8s</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 11-1/4</td>
<td>5-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>5-1/2 x 14</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
<tr>
<td><strong>No. 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(1) 2 x 10</td>
<td>(1) 2 x 12</td>
</tr>
<tr>
<td>6'</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 11-1/4</td>
<td>5-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>5-1/2 x 14</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
<tr>
<td><strong>No. 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>6'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>8'</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>12'</td>
<td>3-1/2 x 11-1/4</td>
<td>5-1/2 x 11-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>5-1/2 x 14</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
</tbody>
</table>

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

**EXAMPLE:** Sliding Glass Door Header – Supporting Roof, Wall & Floor Loads  
(See Table 7 on page 12)

Ground Snow Load** = 30 psf  
(**Equivalent to a 21 psf Design Roof Snow Load)

Dead Load = 10 psf

Load Duration Factor = 1.15

Span of Supported Roof Framing = 20'  
Clear Opening = 10'

Southern Pine Header Selected: No.1 Southern Pine Lumber - (3) 2x12s or  
(from Table 7) 24F-1.7E (V4) Southern Pine Glulam - 3-1/2" x 9-1/4"

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.
Key
Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.7E (V4) stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0” bearing length is assumed, except for the sizes marked with an asterisk (*) which require a 4.5” bearing length. For other bearing lengths, use the Allowable Floor Load Tables (Tables 21-26).

Steps in Using Table 13:
1. Verify the applicability of this table's loading conditions and load duration factor.
2. Find the span of supported floor framing (i.e., sum of the spans of the joists or trusses that frame into the beam) that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported floor framing.

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Floor Framing (Sum of joist spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20'</td>
<td>24'</td>
</tr>
<tr>
<td>8'</td>
<td>(2) 2 x 12s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>9'</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>10'</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>11'</td>
<td>(3) 2 x 12s</td>
<td>(4) 2 x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>13'</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>14'</td>
<td>3-1/2 x 11-7/8</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>15'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
<tr>
<td>16'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
<tr>
<td>17'</td>
<td>3-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
<tr>
<td>18'</td>
<td>3-1/2 x 16</td>
<td>5-1/2 x 16</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 7, Key (*) on this page, and Notes and Example on page 17)
Notes for Table 13: Floor Girder Beams

- Table 13 applies to beams carrying only uniformly distributed floor loads from a single floor. For beams supporting additional uniformly distributed loads from a wall and upper floor, use the Allowable Floor Load Tables (Tables 21-26).
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Beam size is based on the load transferred from 1/2 the span of the supported floor framing assuming two simple spans.
- Deflection is limited to $L_{240}$ for total load and $L_{360}$ for live load.
- For loading conditions other than those provided in Table 13, use the Allowable Floor Load Tables (Tables 21-26). For clear openings other than those provided, use the next larger clear opening shown, or use the Allowable Floor Load Tables.
- Tabulated glued laminated timber sizes may be replaced with other glued laminated timber sizes and/or stress classes with equal or greater load capacity (plf); refer to the appropriate Allowable Floor Load Tables (Tables 24-26) to determine acceptable options.

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

Live Load = 40 psf
Dead Load = 10 psf
Load Duration Factor = 1.00
Span of Supported Floor Framing = 11' + 13' = 24'
Clear Opening = 10'

Southern Pine Beam Selected: No.1 Southern Pine Lumber - (3) 2x12s or
(from Table 13) No.2 Southern Pine Lumber - (4) 2x12s or
24F-1.7E (V4) Southern Pine Glulam - 3-1/2" x 11-1/4"

(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

- Table 14 applies to beams carrying only uniformly distributed floor loads from a single floor. For beams supporting additional uniformly distributed loads from a wall and upper floor, use the Allowable Floor Load Tables (Tables 21-26).
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Beam size is based on the load transferred from 1/2 the span of the supported floor framing.
- Deflection is limited to $L_{240}$ for total load and $L_{360}$ for live load.
- For loading conditions other than those provided in Table 14, use the Allowable Floor Load Tables (Tables 21-26). For clear openings other than those provided, use the next larger clear opening shown, or use the Allowable Floor Load Tables.
- All (1) ply beams may be replaced with (2) 2x8s of the same or better grade.
- Tabulated glued laminated timber sizes may be replaced with other glued laminated timber sizes and/or stress classes with equal or greater load capacity (plf); refer to the appropriate Allowable Floor Load Tables (Tables 24-26) to determine acceptable options.

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

Live Load = 40 psf
Dead Load = 10 psf
Load Duration Factor = 1.00
Span of Supported Floor Framing = 14'
Clear Opening = 14'

Southern Pine Beam Selected: No.1 Southern Pine Lumber - (3) 2x12s or
(from Table 14) No.2 Southern Pine Lumber - (4) 2x12s or
24F-1.7E (V4) Southern Pine Glulam - 3-1/2" x 11-1/4"

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

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.7E (V4) stress class are provided in italics when (4) 2 x 12s no longer meet design parameters. A 3.0” bearing length is assumed. For other bearing lengths, use the Allowable Floor Load Tables (Tables 21-26).

**Steps in Using Table 14:**

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

---

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Floor Framing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>10’</td>
</tr>
<tr>
<td><strong>No. 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10’</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td>11’</td>
<td>(2) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>12’</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>13’</td>
<td>(3) 2 x 10s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>14’</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>15’</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>16’</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>17’</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>18’</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>19’</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td>20’</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
</tr>
</tbody>
</table>

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

Southern Pine lumber sizes for No.1, No.2 and No.3 grades are shown in regular type with the required number of plies in parentheses. Southern Pine glued laminated timber sizes for a 24F-1.7E (V4) stress class are provided in italics when (4) 2x12s no longer meet design parameters. A 3.0” bearing length is assumed, except for the sizes marked with an asterisk (*) which require a 4.5” bearing length. For other bearing lengths, use the appropriate Allowable Roof Load Table (Tables 27-38).

**Steps in Using Tables 15-20:**
1. Select the table with loading conditions and load duration factor satisfying the intended application.
2. Find the span of supported roof framing (i.e., sum of the spans of the rafters or trusses that frame into the beam) that equals or exceeds the intended application.
3. Find the clear opening.
4. Select product size for the appropriate grade, clear opening and span of supported roof framing.

**Notes for Tables 15 - 20: Roof Ridge Beams**

- Bearing lengths, use the appropriate Timber sizes for a 24F-1.7E (V4) stress class are provided in italics when (4) 2x12s.
- Select product size for the appropriate grade, clear opening and span of supported roof framing.
- Find the clear opening.
- Find the span of supported roof framing (i.e., sum of the spans of the rafters or trusses that frame into the beam) that equals or exceeds the intended application.
- Select product size for the appropriate grade, clear opening and span of supported roof framing.
- Supported roof framing.

**Table 15 – 30 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing (sum of rafter spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16’</td>
<td>20’</td>
</tr>
<tr>
<td>No. 1</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>10’</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 10s</td>
</tr>
<tr>
<td>12’</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td>14’</td>
<td>(3) 2 x 12s</td>
<td>(4) 2 x 12s</td>
</tr>
<tr>
<td>16’</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>18’</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>20’</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>22’</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
<tr>
<td>24’</td>
<td>3-1/2 x 11-1/4</td>
<td>3-1/2 x 11-1/4</td>
</tr>
</tbody>
</table>

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

**Notes for Tables 15 - 20: Roof Ridge Beams**

- Tables 15-20 apply to beams carrying only uniformly distributed roof loads.
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Beam size is based on the load transferred from 1/2 the span of the supported roof framing. Calculations assume the worst case of simple- or continuous-span glued laminated timber, but only simple-span Southern Pine lumber beams.
- Deflection is limited to 1/180 for total load and 1/240 for live load.
- Design Roof Snow Loads have been derived by reducing Ground Snow Loads in accordance with ASCE 7-10, Section 7.3. This results in an equivalent balanced Design Roof Snow Load of 0.70 times the Ground Snow Load, with a required minimum of 20 psf (pounds per square foot). Unbalanced snow loads, drifting or rain-on-snow surcharges have not been considered. Roof live load reductions have not been taken.
- For loading conditions other than those provided in Tables 15-20, use another table in this section with higher loading conditions than required, or use the Allowable Roof Load Table with the corresponding load duration factor (Tables 27-38). For clear openings other than those provided, use the next larger clear opening shown, or use the appropriate Allowable Roof Load Table.
- All (1) ply lumber headers may be replaced with (2) 2x8s of the same or better grade.
- Tabulated glued laminated timber sizes may be replaced with other glued laminated timber sizes and/or stress classes with equal or greater load capacity (psf), refer to the appropriate Allowable Roof Load Tables (Tables 30-32 or 36-38) to determine acceptable options.
### Table 16 – 40 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor

<table>
<thead>
<tr>
<th>Grade No.</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing (sum of rafter spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10'</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s  (2) 2 x 12s  (3) 2 x 10s  (3) 2 x 12s  (3) 2 x 12s  (3) 2 x 12s</td>
</tr>
<tr>
<td>12'</td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10s  (3) 2 x 12s  (3) 2 x 12s  (4) 2 x 12s  (4) 2 x 12s  (4) 2 x 12s</td>
</tr>
<tr>
<td>14'</td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s  (4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 11-7/8  3-1/2 x 11-3/4  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-3/4  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8</td>
</tr>
<tr>
<td>16'</td>
<td>(3) 2 x 12s</td>
<td>(4) 2 x 12s  (3-1/2 x 11-1/4  3-1/2 x 11-1/4  3-1/2 x 11-7/8  3-1/2 x 11-1/4  3-1/2 x 11-1/4  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8</td>
</tr>
<tr>
<td>18'</td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8  3-1/2 x 11-7/8</td>
</tr>
<tr>
<td>20'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14   3-1/2 x 14   3-1/2 x 14   3-1/2 x 14   3-1/2 x 14   3-1/2 x 14   3-1/2 x 14   3-1/2 x 14</td>
</tr>
<tr>
<td>22'</td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16</td>
</tr>
<tr>
<td>24'</td>
<td>3-1/2 x 16</td>
<td>3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16   3-1/2 x 16</td>
</tr>
</tbody>
</table>

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

### Table 17 – 50 psf Ground Snow Load **, 10 psf Dead Load, 1.15 Load Duration Factor

<table>
<thead>
<tr>
<th>Grade No.</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing (sum of rafter spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10'</td>
<td>(3) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>12'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>14'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>16'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>18'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>20'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>22'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
<tr>
<td>24'</td>
<td>(4) 2 x 12s</td>
<td>(4) 2 x 12s  (4) 2 x 12s  (3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4  3-1/2 x 9-1/4</td>
</tr>
</tbody>
</table>

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

(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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing (sum of rafter spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td>(3) 3-1/2 x 14</td>
<td>(3) 3-1/2 x 14</td>
</tr>
<tr>
<td></td>
<td>(3) 3-1/2 x 14</td>
<td>(3) 3-1/2 x 14</td>
</tr>
<tr>
<td>No. 2</td>
<td>(3) 3-1/2 x 14</td>
<td>(3) 3-1/2 x 14</td>
</tr>
<tr>
<td>No. 3</td>
<td>(3) 3-1/2 x 14</td>
<td>(3) 3-1/2 x 14</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing (sum of rafter spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td>(2) 3-1/2 x 14</td>
<td>(2) 3-1/2 x 14</td>
</tr>
<tr>
<td>No. 2</td>
<td>(2) 3-1/2 x 14</td>
<td>(2) 3-1/2 x 14</td>
</tr>
<tr>
<td>No. 3</td>
<td>(2) 3-1/2 x 14</td>
<td>(2) 3-1/2 x 14</td>
</tr>
</tbody>
</table>

(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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Clear Opening</th>
<th>Span of Supported Roof Framing (sum of rafter spans from both sides of beam)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>16'</td>
<td>20'</td>
</tr>
<tr>
<td>No. 1</td>
<td>(2) 2 x 10s</td>
<td>(2) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>(2) 2 x 12s</td>
<td>(3) 2 x 10s</td>
</tr>
<tr>
<td></td>
<td>(3) 2 x 12s</td>
<td>(3) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>(3) 2 x 12s</td>
<td>(4) 2 x 12s</td>
</tr>
<tr>
<td></td>
<td>(4) 2 x 12s</td>
<td>3-1/2 x 11-7/8</td>
</tr>
<tr>
<td></td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 14</td>
</tr>
<tr>
<td></td>
<td>3-1/2 x 14</td>
<td>3-1/2 x 16</td>
</tr>
</tbody>
</table>

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

### Example: Roof Ridge Beam

(See Table 16 on page 20)

#### 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 = 14' + 14' = 28'

#### Clear Opening = 14'

**Southern Pine Beam Selected:** No.1 Southern Pine Lumber - (4) 2x12s or

(From Table 16) 24F-1.7E (V4) Southern Pine Glulam - 3-1/2'' x 11-1/4''
Requirements for Use of Allowable Load Tables

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

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

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

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

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

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

7. These tables assume unbalanced glued laminated timber combinations used in simple-span applications. Balanced beam combinations with equal or greater design values may be substituted and used in either simple-span or continuous-span applications.

8. These tables are only applicable to members used under ordinary ranges of temperature and occasionally heated in use up to 150° F.
Key – for each clear opening there are three rows of values:

TL: Maximum total load in pounds per lineal foot (plf) with deflection limited to \[\frac{\ell}{240}\].

LL: Maximum live load in pounds per lineal foot (plf) with deflection limited to \[\frac{\ell}{360}\].

BL: Required bearing length in inches.

Steps in Sizing Headers and Beams:

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

### Table 21 – No. 1 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>4'</td>
<td>406</td>
<td>637</td>
<td>849</td>
<td>1150</td>
</tr>
<tr>
<td>6'</td>
<td>15</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>8'</td>
<td>103</td>
<td>166</td>
<td>225</td>
<td>315</td>
</tr>
<tr>
<td>10'</td>
<td>66</td>
<td>106</td>
<td>144</td>
<td>203</td>
</tr>
<tr>
<td>12'</td>
<td>41</td>
<td>73</td>
<td>100</td>
<td>140</td>
</tr>
<tr>
<td>14'</td>
<td>25</td>
<td>53</td>
<td>73</td>
<td>102</td>
</tr>
<tr>
<td>16'</td>
<td>16</td>
<td>39</td>
<td>55</td>
<td>78</td>
</tr>
<tr>
<td>18'</td>
<td>11</td>
<td>26</td>
<td>43</td>
<td>61</td>
</tr>
</tbody>
</table>

![Diagram](https://via.placeholder.com/150)

**Floor Live Load = 30 psf**

**Floor Dead Load = 10 psf**

**Load Duration Factor = 1.00**

**Floor Joist Spans = 1 @ 12’ and 1 @ 14’**

**Clear Opening = 12’**

Total Load = \((12’/2 + 14’/2) \times (30 + 10) \text{ psf} = 520 \text{ plf}\)

Live Load = \((12’/2 + 14’/2) \times 30 \text{ psf} = 390 \text{ plf}\)

Select the 12’ clear opening in Tables 21-26. Read across the TL row in each table to find columns with total loads equal to or greater than the required 520 plf. Then check the LL row in those columns to make sure the corresponding live loads are equal to or greater than the required 390 plf. Solutions include: from Table 21 for No. 1 SP lumber, select a 4-ply 2\times12 beam requiring a 1.5” bearing length; from Table 24 for 24’-1.7E (V4) SP glulam, select a 3-1/2\times11-1/4’ beam requiring a 3.0” bearing length; from Table 26 for 24’-1.8E (V3) SP glulam, select a 3-1/8\times11” beam requiring a 3.0” bearing length.

### Notes for Tables 21 - 26: Allowable Floor Loads (plf) - 1.00 Load Duration Factor

- Tabulated total loads (TL) and live loads (LL) represent the allowable uniformly distributed loads that a beam can support in addition to its own weight. Deflection is limited to \[\frac{\ell}{240}\] for total load and \[\frac{\ell}{360}\] for live load. To determine an allowable live load for a deflection limit other than \[\frac{\ell}{360}\], multiply the LL value by the ratio of 360 divided by the desired deflection constant. The result must not exceed the corresponding TL value for the same clear opening and product.
- Tabulated bearing lengths (BL) reflect the number of 2x trimmers required at each end of the header or beam based on the corresponding plf loads (e.g., 1.5” = one trimmer, 3.0” = two trimmers, etc.). Additional checks may be required for bearing length and trimmers.
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Interpolation between clear openings is permitted.
- The design span is assumed to be the clear opening plus 1/2 the required bearing length at each end.
### Table 22 – No. 2 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4' TL</td>
<td>303</td>
<td>479</td>
<td>661</td>
<td>891</td>
</tr>
<tr>
<td>6' TL</td>
<td>136</td>
<td>218</td>
<td>304</td>
<td>417</td>
</tr>
<tr>
<td>8' TL</td>
<td>76</td>
<td>122</td>
<td>172</td>
<td>237</td>
</tr>
<tr>
<td>10' TL</td>
<td>48</td>
<td>78</td>
<td>110</td>
<td>152</td>
</tr>
<tr>
<td>12' TL</td>
<td>33</td>
<td>53</td>
<td>75</td>
<td>105</td>
</tr>
<tr>
<td>14' TL</td>
<td>22</td>
<td>39</td>
<td>55</td>
<td>76</td>
</tr>
<tr>
<td>16' TL</td>
<td>14</td>
<td>29</td>
<td>41</td>
<td>57</td>
</tr>
<tr>
<td>18' TL</td>
<td>9</td>
<td>22</td>
<td>32</td>
<td>45</td>
</tr>
</tbody>
</table>

### Table 23 – No. 3 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4' TL</td>
<td>176</td>
<td>277</td>
<td>403</td>
<td>555</td>
</tr>
<tr>
<td>6' TL</td>
<td>78</td>
<td>124</td>
<td>181</td>
<td>253</td>
</tr>
<tr>
<td>8' TL</td>
<td>43</td>
<td>69</td>
<td>101</td>
<td>142</td>
</tr>
<tr>
<td>10' TL</td>
<td>27</td>
<td>43</td>
<td>64</td>
<td>90</td>
</tr>
<tr>
<td>12' TL</td>
<td>18</td>
<td>29</td>
<td>44</td>
<td>61</td>
</tr>
<tr>
<td>14' TL</td>
<td>13</td>
<td>21</td>
<td>31</td>
<td>44</td>
</tr>
<tr>
<td>16' TL</td>
<td>9</td>
<td>15</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>18' TL</td>
<td>7</td>
<td>12</td>
<td>18</td>
<td>25</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 23, and Key, Example and Notes on page 24)
## Table 24 – 24F-1.7E (V4) Southern Pine Glued Laminated Timber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/2&quot; Width</th>
<th>5-1/2&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in.)</td>
<td>Depth (in.)</td>
</tr>
<tr>
<td>6'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>1686</td>
<td>2784</td>
</tr>
<tr>
<td>LL</td>
<td>1686</td>
<td>2784</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>8'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>1162</td>
<td>1870</td>
</tr>
<tr>
<td>LL</td>
<td>1073</td>
<td>1870</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>10'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>770</td>
<td>1406</td>
</tr>
<tr>
<td>LL</td>
<td>559</td>
<td>1406</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>12'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>484</td>
<td>1125</td>
</tr>
<tr>
<td>LL</td>
<td>328</td>
<td>918</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>14'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>305</td>
<td>858</td>
</tr>
<tr>
<td>LL</td>
<td>209</td>
<td>583</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>16'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>140</td>
<td>402</td>
</tr>
<tr>
<td>LL</td>
<td>99</td>
<td>278</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>18'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>100</td>
<td>290</td>
</tr>
<tr>
<td>LL</td>
<td>72</td>
<td>204</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>20'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>73</td>
<td>214</td>
</tr>
<tr>
<td>LL</td>
<td>54</td>
<td>153</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>22'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>97</td>
<td>162</td>
</tr>
<tr>
<td>LL</td>
<td>91</td>
<td>91</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>24'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>61</td>
<td>115</td>
</tr>
<tr>
<td>LL</td>
<td>47</td>
<td>88</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>26'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>79</td>
<td>124</td>
</tr>
<tr>
<td>LL</td>
<td>59</td>
<td>109</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>28'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>61</td>
<td>115</td>
</tr>
<tr>
<td>LL</td>
<td>47</td>
<td>88</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>30'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>99</td>
<td>156</td>
</tr>
<tr>
<td>LL</td>
<td>74</td>
<td>117</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>32'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>80</td>
<td>125</td>
</tr>
<tr>
<td>LL</td>
<td>61</td>
<td>96</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>34'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>64</td>
<td>101</td>
</tr>
<tr>
<td>LL</td>
<td>51</td>
<td>80</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>36'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>82</td>
<td>129</td>
</tr>
<tr>
<td>LL</td>
<td>64</td>
<td>101</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>38'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>68</td>
<td>107</td>
</tr>
<tr>
<td>LL</td>
<td>55</td>
<td>86</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

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

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

- For practicality, allowable floor loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/2" and 5-1/2"-wide beams, respectively, and when a glued laminated timber beam span-to-depth ratio exceeds 30.
- To determine allowable floor loads for 3- and 3-1/8"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/2"-wide beams by 0.857 and 0.893, respectively. Then check the required bearing length (BL).
- To determine allowable floor loads for 5- and 5-1/8"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/2" wide beams by 0.909 or 0.932, respectively. Then check the required bearing length (BL).
Table 25 – 24F-1.7E (V4) Southern Pine Glued Laminated Timber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/8&quot; Width</th>
<th>5-1/8&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in.)</td>
<td>Depth (in.)</td>
</tr>
<tr>
<td>8'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>10'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>12'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>14'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>16'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>18'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>20'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>24'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>26'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>28'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>30'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>32'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>34'</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>36'</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

Notes for Table 25: Allowable Floor Loads (plf) - 1.00 Load Duration Factor

- For practicality, allowable floor loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/8" and 5-1/8"-wide beams, respectively, and when a glued laminated timber beam span-to-depth ratio exceeds 30.
- To determine allowable floor loads for 3- and 3-1/2"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/8"-wide beams by 0.96 and 1.12, respectively. Then check the required bearing length (BL).
- To determine allowable floor loads for 5- and 5-1/2"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/8" wide beams by 0.976 or 1.073, respectively. Then check the required bearing length (BL).
### Table 26 – 24F-1.8E (V3) Southern Pine Glued Laminated Timber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/8&quot; Width</th>
<th>5-1/8&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in.)</td>
<td>Depth (in.)</td>
</tr>
<tr>
<td>8&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>1481 1975</td>
<td>1481 1975</td>
</tr>
<tr>
<td>LL</td>
<td>1481 1975</td>
<td>1481 1975</td>
</tr>
<tr>
<td>BL</td>
<td>3.0 3.0 4.5</td>
<td>4.5 4.5 6.0</td>
</tr>
<tr>
<td>10&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>549 743 963</td>
<td>1580 1992</td>
</tr>
<tr>
<td>LL</td>
<td>378 594 875</td>
<td>1453 1992</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 3.0 3.0</td>
<td>3.0 3.0 4.5</td>
</tr>
<tr>
<td>12&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>204 325 483</td>
<td>792 1027</td>
</tr>
<tr>
<td>LL</td>
<td>140 222 328</td>
<td>537 759</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 3.0 3.0</td>
</tr>
<tr>
<td>16&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>135 216 324</td>
<td>531 754</td>
</tr>
<tr>
<td>LL</td>
<td>94 149 222</td>
<td>363 513</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 3.0 3.0</td>
</tr>
<tr>
<td>18&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>66 108 163</td>
<td>267 383</td>
</tr>
<tr>
<td>LL</td>
<td>49 77 114</td>
<td>188 266</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>20&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>79 121 174</td>
<td>198 285</td>
</tr>
<tr>
<td>LL</td>
<td>58 86 122</td>
<td>141 201</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>24&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>91 132 183</td>
<td>149 216</td>
</tr>
<tr>
<td>LL</td>
<td>67 94 129</td>
<td>109 155</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>26&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>70 102 142</td>
<td>115 167</td>
</tr>
<tr>
<td>LL</td>
<td>52 74 102</td>
<td>86 122</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>28&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>80 112 151</td>
<td>-131 183</td>
</tr>
<tr>
<td>LL</td>
<td>60 82 108</td>
<td>98 138</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>30&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>63 89 121</td>
<td>-103 146</td>
</tr>
<tr>
<td>LL</td>
<td>40 67 88</td>
<td>-82 109</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>32&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>71 97 129</td>
<td>-117 160</td>
</tr>
<tr>
<td>LL</td>
<td>55 73 94</td>
<td>-90 120</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>34&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>58 79 105</td>
<td>-95 130</td>
</tr>
<tr>
<td>LL</td>
<td>46 61 79</td>
<td>-75 100</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>36&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>65 87 113</td>
<td>-107 142</td>
</tr>
<tr>
<td>LL</td>
<td>51 67 84</td>
<td>-84 109</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
<tr>
<td>38&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>72 94</td>
<td>-118 154</td>
</tr>
<tr>
<td>LL</td>
<td>57 72</td>
<td>-93 118</td>
</tr>
<tr>
<td>BL</td>
<td>1.5 1.5 1.5</td>
<td>1.5 1.5 1.5</td>
</tr>
</tbody>
</table>

### Notes for Table 26: Allowable Floor Loads (plf) • 1.00 Load Duration Factor

- For practicality, allowable floor loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/8" and 5-1/8"-wide beams, respectively, and when a glued laminated timber beam span-to-depth ratio exceeds 30.
- To determine allowable floor loads for 3- and 3-1/2"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/8"-wide beams by 0.96 and 1.12, respectively. Then check the required bearing length (BL).
- To determine allowable floor loads for 5- and 5-1/2"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/8" wide beams by 0.976 or 1.073, respectively. Then check the required bearing length (BL).

(Southern Pine Headers & Beams 2013 Edition)
Key – for each clear opening there are three rows of values:

- TL: Maximum total load in pounds per lineal foot (plf) with deflection limited to \( \frac{L}{180} \)
- LL: Maximum live load in pounds per lineal foot (plf) with deflection limited to \( \frac{L}{240} \)
- BL: Required bearing length in inches

Steps in Sizing Headers and Beams:

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

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4'</td>
<td>TL</td>
<td>LL</td>
<td>BL</td>
<td>TL</td>
</tr>
<tr>
<td>4'</td>
<td>464</td>
<td>928</td>
<td>1.5</td>
<td>464</td>
</tr>
<tr>
<td>6'</td>
<td>211</td>
<td>928</td>
<td>1.5</td>
<td>211</td>
</tr>
<tr>
<td>8'</td>
<td>119</td>
<td>238</td>
<td>1.5</td>
<td>119</td>
</tr>
<tr>
<td>10'</td>
<td>76</td>
<td>151</td>
<td>1.5</td>
<td>76</td>
</tr>
<tr>
<td>12'</td>
<td>52</td>
<td>104</td>
<td>1.5</td>
<td>52</td>
</tr>
<tr>
<td>14'</td>
<td>34</td>
<td>85</td>
<td>1.5</td>
<td>34</td>
</tr>
<tr>
<td>16'</td>
<td>22</td>
<td>44</td>
<td>1.5</td>
<td>22</td>
</tr>
<tr>
<td>18'</td>
<td>15</td>
<td>30</td>
<td>1.5</td>
<td>15</td>
</tr>
</tbody>
</table>

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

Notes for Tables 27 - 32: Allowable Roof Loads (plf) - 1.15 Load Duration Factor

- Tabulated total loads (TL) and live loads (LL) represent the allowable uniformly distributed loads that a beam can support in addition to its own weight. Deflection is limited to \( \frac{L}{180} \) for total load and \( \frac{L}{240} \) for live load. To determine an allowable live load for a deflection limit other than \( \frac{L}{240} \), multiply the LL value by the ratio of 240 divided by the desired deflection constant. The result must not exceed the corresponding TL value for the same clear opening and product.
- Tabulated bearing lengths (BL) reflect the number of 2x trimmers required at each end of the header or beam based on the corresponding plf loads (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.). Additional checks may be required for bearing length and trimmers.
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Interpolation between clear openings is permitted.
- The design span is assumed to be the clear opening plus 1/2 the required bearing length at each end.
### Table 28 – No. 2 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>6”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>8”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>10”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>12”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>14”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>16”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>18”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
</tbody>
</table>

### Table 29 – No. 3 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>6”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>8”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>10”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>12”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>14”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>16”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>18”</td>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
</tr>
<tr>
<td>TL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
<tr>
<td>LL</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
<td>1.5 x 1.5</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 23, and Key, Example and Notes on page 29)

Copyright © 2013. Southern Forest Products Association. All rights reserved.
<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/2&quot; Width</th>
<th>5-1/2&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in.)</td>
<td>Depth (in.)</td>
</tr>
<tr>
<td>6'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>1940</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>1940</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>8'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>1337</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>1337</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>10'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>883</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>884</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>12'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>617</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>489</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>14'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>272</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>189</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>16'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>136</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>113</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>18'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>85</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>71</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>20'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>110</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>89</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>22'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>24'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>26'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>28'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>30'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>32'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>34'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>36'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
<tr>
<td>38'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>1.15</td>
</tr>
<tr>
<td>LL</td>
<td>77</td>
<td>1.15</td>
</tr>
<tr>
<td>BL</td>
<td>1.5</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Notes for Table 30: Allowable Roof Loads (plf) - 1.15 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/2" and 5-1/2"-wide beams, respectively, and when a glued laminated timber’s span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/8"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/2"-wide beams by 0.857 and 0.893, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/8"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/2" wide beams by 0.909 or 0.932, respectively. Then check the required bearing length (BL).
<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/8&quot; Width</th>
<th>5-1/8&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>6'</td>
<td>1489 1828 2205 2626</td>
<td>2890 3442 4062 4763 5564</td>
</tr>
<tr>
<td>8'</td>
<td>976 1254 1487 1738 2009 2303 2622 2971</td>
<td>1948 2277 2632 3017 3436 3849 4395 4947 5557</td>
</tr>
<tr>
<td>10'</td>
<td>631 852 1104 1298 1485 1684 1895 2121</td>
<td>1468 1699 1945 2205 2483 2778 3093 3431 3793 4183</td>
</tr>
<tr>
<td>12'</td>
<td>410 595 773 972 1177 1326 1483 1648</td>
<td>1176 1535 1540 1736 1941 2157 2384 2623 2876 3143</td>
</tr>
<tr>
<td>14'</td>
<td>258 409 570 719 883 1063 1217 1346</td>
<td>935 1125 1274 1430 1592 1761 1938 2122 2314 2515</td>
</tr>
<tr>
<td>16'</td>
<td>172 274 408 552 679 818 969 1133</td>
<td>669 905 1086 1215 1349 1487 1631 1780 1934 2094</td>
</tr>
<tr>
<td>18'</td>
<td>119 191 286 407 537 648 769 899</td>
<td>469 667 881 1055 1169 1286 1407 1532 1660 1793</td>
</tr>
<tr>
<td>20'</td>
<td>85 137 207 296 406 525 624 730</td>
<td>339 485 665 854 1010 1132 1236 1343 1453 1567</td>
</tr>
<tr>
<td>22'</td>
<td>82 122 173 236 312 403 510</td>
<td>199 284 387 512 661 837 1041 1196 1292 1390</td>
</tr>
<tr>
<td>24'</td>
<td>117 168 233 311 404 506</td>
<td>192 276 381 509 662 810 935 1069 1162 1249</td>
</tr>
<tr>
<td>26'</td>
<td>90 131 181 243 316 402</td>
<td>148 214 297 398 519 660 792 906 1026 1133</td>
</tr>
<tr>
<td>28'</td>
<td>105 144 191 247 312</td>
<td>122 173 236 313 405 512 637 780 943 1128</td>
</tr>
<tr>
<td>30'</td>
<td>103 143 193 252 321</td>
<td>169 235 316 413 526 658 777 881 990</td>
</tr>
<tr>
<td>32'</td>
<td>82 115 155 203 259</td>
<td>134 188 254 323 425 533 656 783 858</td>
</tr>
<tr>
<td>34'</td>
<td>93 126 165 212</td>
<td>152 206 271 347 436 538 655 750</td>
</tr>
<tr>
<td>36'</td>
<td>78 103 134 169</td>
<td>127 169 219 278 346 424 512 613</td>
</tr>
<tr>
<td>38'</td>
<td>76 103 136 175</td>
<td>124 169 223 286 361 446 543 653</td>
</tr>
<tr>
<td>30'</td>
<td>85 112 145</td>
<td>139 184 238 300 373 455 547</td>
</tr>
<tr>
<td>32'</td>
<td>73 94 119</td>
<td>119 154 196 244 299 362 433</td>
</tr>
<tr>
<td>34'</td>
<td>94 121</td>
<td>154 199 252 313 383 462</td>
</tr>
<tr>
<td>36'</td>
<td>80 102</td>
<td>131 167 208 255 309 369</td>
</tr>
<tr>
<td>38'</td>
<td>15 1.5</td>
<td>1.5 1.5 3.0</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 23, Key and Example on page 29, and Notes on page 29 and this page)

**Notes for Table 31: Allowable Roof Loads (plf) - 1.15 Load Duration Factor**

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per linear foot (plf) for the 3-1/8" and 5-1/8"-wide beams, respectively, and when a glued laminated timber’s span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/2"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/8"-wide beams by 0.96 and 1.12, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/2"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/8" wide beams by 0.976 or 1.073, respectively. Then check the required bearing length (BL).
## Table 32 – 24F-1.8E (V3) Southern Pine Glued Laminated Timber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/8&quot; Width</th>
<th>5-1/8&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in.)</td>
<td>Depth (in.)</td>
</tr>
<tr>
<td>6&quot; TL</td>
<td>1689</td>
<td>2245</td>
</tr>
<tr>
<td>6&quot; LL</td>
<td>1689</td>
<td>2245</td>
</tr>
<tr>
<td>6&quot; BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>8&quot; TL</td>
<td>976</td>
<td>1311</td>
</tr>
<tr>
<td>8&quot; LL</td>
<td>976</td>
<td>1311</td>
</tr>
<tr>
<td>8&quot; BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>10&quot; TL</td>
<td>631</td>
<td>852</td>
</tr>
<tr>
<td>10&quot; LL</td>
<td>565</td>
<td>852</td>
</tr>
<tr>
<td>10&quot; BL</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>12&quot; TL</td>
<td>434</td>
<td>595</td>
</tr>
<tr>
<td>12&quot; LL</td>
<td>330</td>
<td>520</td>
</tr>
<tr>
<td>12&quot; BL</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>14&quot; TL</td>
<td>273</td>
<td>433</td>
</tr>
<tr>
<td>14&quot; LL</td>
<td>210</td>
<td>330</td>
</tr>
<tr>
<td>14&quot; BL</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>16&quot; TL</td>
<td>182</td>
<td>290</td>
</tr>
<tr>
<td>16&quot; LL</td>
<td>141</td>
<td>223</td>
</tr>
<tr>
<td>16&quot; BL</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>18&quot; TL</td>
<td>126</td>
<td>202</td>
</tr>
<tr>
<td>18&quot; LL</td>
<td>100</td>
<td>157</td>
</tr>
<tr>
<td>18&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>20&quot; TL</td>
<td>90</td>
<td>146</td>
</tr>
<tr>
<td>20&quot; LL</td>
<td>73</td>
<td>115</td>
</tr>
<tr>
<td>20&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>22&quot; TL</td>
<td>108</td>
<td>163</td>
</tr>
<tr>
<td>22&quot; LL</td>
<td>87</td>
<td>129</td>
</tr>
<tr>
<td>22&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>24&quot; TL</td>
<td>100</td>
<td>141</td>
</tr>
<tr>
<td>24&quot; LL</td>
<td>143</td>
<td>217</td>
</tr>
<tr>
<td>24&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>26&quot; TL</td>
<td>96</td>
<td>139</td>
</tr>
<tr>
<td>26&quot; LL</td>
<td>78</td>
<td>111</td>
</tr>
<tr>
<td>26&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>28&quot; TL</td>
<td>109</td>
<td>152</td>
</tr>
<tr>
<td>28&quot; LL</td>
<td>89</td>
<td>122</td>
</tr>
<tr>
<td>28&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>30&quot; TL</td>
<td>87</td>
<td>122</td>
</tr>
<tr>
<td>30&quot; LL</td>
<td>73</td>
<td>100</td>
</tr>
<tr>
<td>30&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>32&quot; TL</td>
<td>99</td>
<td>134</td>
</tr>
<tr>
<td>32&quot; LL</td>
<td>82</td>
<td>109</td>
</tr>
<tr>
<td>32&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>34&quot; TL</td>
<td>81</td>
<td>110</td>
</tr>
<tr>
<td>34&quot; LL</td>
<td>69</td>
<td>91</td>
</tr>
<tr>
<td>34&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>36&quot; TL</td>
<td>91</td>
<td>120</td>
</tr>
<tr>
<td>36&quot; LL</td>
<td>77</td>
<td>100</td>
</tr>
<tr>
<td>36&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>38&quot; TL</td>
<td>100</td>
<td>129</td>
</tr>
<tr>
<td>38&quot; LL</td>
<td>85</td>
<td>108</td>
</tr>
<tr>
<td>38&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 23, Key and Example on page 29, and Notes on page 29 and this page)

### Notes for Table 32: Allowable Roof Loads (plf) - 1.15 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per linear foot (plf) for the 3-1/8" and 5-1/8"-wide beams, respectively, and when a glued laminated timber's span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/2"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/8"-wide beams by 0.96 and 1.12, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/2"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/8" wide beams by 0.976 or 1.073, respectively. Then check the required bearing length (BL).
### Key – for each clear opening there are three rows of values:

- **TL**: Maximum total load in pounds per lineal foot (plf) with deflection limited to $L/180$
- **LL**: Maximum live load in pounds per lineal foot (plf) with deflection limited to $L/240$
- **BL**: Required bearing length in inches

### Steps in Sizing Headers or Beams:

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

### Example: Allowable Roof Loads

![Diagram of roof load example]

- **Roof Live Load**: 20 psf
- **Roof Dead Load**: 7 psf
- **Load Duration Factor**: 1.25
- **Roof Truss Span**: 26' + 2' overhang
- **Clear Opening**: 16'

Select the 16' clear opening in Tables 33-38. Read across the TL row in each table to find columns with total loads equal to or greater than the required 405 plf. Then check the LL row in those columns to make sure the corresponding live loads are equal to or greater than the required 300 plf.

### Table 33 – No. 1 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x 6</td>
<td>2 x 8</td>
<td>2 x 10</td>
<td>2 x 12</td>
<td>2 x 6</td>
</tr>
<tr>
<td>TL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4'</td>
<td>502</td>
<td>783</td>
<td>1036</td>
<td>1389</td>
</tr>
<tr>
<td>6'</td>
<td>229</td>
<td>364</td>
<td>490</td>
<td>677</td>
</tr>
<tr>
<td>8'</td>
<td>129</td>
<td>207</td>
<td>281</td>
<td>391</td>
</tr>
<tr>
<td>10'</td>
<td>82</td>
<td>132</td>
<td>180</td>
<td>253</td>
</tr>
<tr>
<td>12'</td>
<td>55</td>
<td>92</td>
<td>125</td>
<td>176</td>
</tr>
<tr>
<td>14'</td>
<td>34</td>
<td>67</td>
<td>91</td>
<td>129</td>
</tr>
<tr>
<td>16'</td>
<td>22</td>
<td>51</td>
<td>69</td>
<td>98</td>
</tr>
</tbody>
</table>

### Notes for Tables 33 - 38: Allowable Roof Loads (plf) - 1.25 Load Duration Factor

- Tabulated total loads (TL) and live loads (LL) represent the allowable uniformly distributed loads that a beam can support in addition to its own weight. Deflection is limited to $L/180$ for total load and $L/240$ for live load. To determine an allowable live load for a deflection limit other than $L/240$, multiply the LL value by the ratio of 240 divided by the desired deflection constant. The result must not exceed the corresponding TL value for the same clear opening and product.
- Tabulated bearing lengths (BL) reflect the number of 2x trimmers required at each end of the header or beam based on the corresponding plf loads (e.g., 1.5" = one trimmer, 3.0" = two trimmers, etc.). Additional checks may be required for bearing length and trimmers.
- See Assumptions for Table Development beginning on page 2 for details on design assumptions made to generate these tables.
- Interpolation between clear openings is permitted.
- The design span is assumed to be the clear opening plus 1/2 the required bearing length at each end.
### Table 34 – No. 2 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot; TL</td>
<td>377</td>
<td>592</td>
<td>812</td>
<td>1087</td>
</tr>
<tr>
<td>4&quot; LL</td>
<td>377</td>
<td>592</td>
<td>812</td>
<td>1087</td>
</tr>
<tr>
<td>4&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>6&quot; TL</td>
<td>170</td>
<td>271</td>
<td>378</td>
<td>516</td>
</tr>
<tr>
<td>6&quot; LL</td>
<td>170</td>
<td>271</td>
<td>378</td>
<td>516</td>
</tr>
<tr>
<td>6&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>8&quot; TL</td>
<td>96</td>
<td>153</td>
<td>215</td>
<td>296</td>
</tr>
<tr>
<td>8&quot; LL</td>
<td>96</td>
<td>153</td>
<td>215</td>
<td>296</td>
</tr>
<tr>
<td>8&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>10&quot; TL</td>
<td>61</td>
<td>98</td>
<td>137</td>
<td>190</td>
</tr>
<tr>
<td>10&quot; LL</td>
<td>61</td>
<td>98</td>
<td>137</td>
<td>190</td>
</tr>
<tr>
<td>10&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>12&quot; TL</td>
<td>42</td>
<td>67</td>
<td>95</td>
<td>131</td>
</tr>
<tr>
<td>12&quot; LL</td>
<td>37</td>
<td>67</td>
<td>95</td>
<td>131</td>
</tr>
<tr>
<td>12&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>14&quot; TL</td>
<td>29</td>
<td>49</td>
<td>69</td>
<td>96</td>
</tr>
<tr>
<td>14&quot; LL</td>
<td>23</td>
<td>49</td>
<td>69</td>
<td>96</td>
</tr>
<tr>
<td>14&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>16&quot; TL</td>
<td>19</td>
<td>37</td>
<td>52</td>
<td>73</td>
</tr>
<tr>
<td>16&quot; LL</td>
<td>16</td>
<td>36</td>
<td>52</td>
<td>73</td>
</tr>
<tr>
<td>16&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>18&quot; TL</td>
<td>13</td>
<td>29</td>
<td>41</td>
<td>57</td>
</tr>
<tr>
<td>18&quot; LL</td>
<td>11</td>
<td>25</td>
<td>41</td>
<td>57</td>
</tr>
<tr>
<td>18&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 23, and Key, Example and Notes on page 34)

### Table 35 – No. 3 Southern Pine Lumber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>1-ply</th>
<th>2-ply</th>
<th>3-ply</th>
<th>4-ply</th>
</tr>
</thead>
<tbody>
<tr>
<td>4&quot; TL</td>
<td>219</td>
<td>344</td>
<td>499</td>
<td>685</td>
</tr>
<tr>
<td>4&quot; LL</td>
<td>219</td>
<td>344</td>
<td>499</td>
<td>685</td>
</tr>
<tr>
<td>4&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>6&quot; TL</td>
<td>98</td>
<td>155</td>
<td>226</td>
<td>315</td>
</tr>
<tr>
<td>6&quot; LL</td>
<td>98</td>
<td>155</td>
<td>226</td>
<td>315</td>
</tr>
<tr>
<td>6&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>8&quot; TL</td>
<td>54</td>
<td>86</td>
<td>127</td>
<td>178</td>
</tr>
<tr>
<td>8&quot; LL</td>
<td>54</td>
<td>86</td>
<td>127</td>
<td>178</td>
</tr>
<tr>
<td>8&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>10&quot; TL</td>
<td>34</td>
<td>55</td>
<td>81</td>
<td>113</td>
</tr>
<tr>
<td>10&quot; LL</td>
<td>34</td>
<td>55</td>
<td>81</td>
<td>113</td>
</tr>
<tr>
<td>10&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>12&quot; TL</td>
<td>23</td>
<td>37</td>
<td>55</td>
<td>78</td>
</tr>
<tr>
<td>12&quot; LL</td>
<td>23</td>
<td>37</td>
<td>55</td>
<td>78</td>
</tr>
<tr>
<td>12&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>14&quot; TL</td>
<td>16</td>
<td>27</td>
<td>40</td>
<td>56</td>
</tr>
<tr>
<td>14&quot; LL</td>
<td>16</td>
<td>27</td>
<td>40</td>
<td>56</td>
</tr>
<tr>
<td>14&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>16&quot; TL</td>
<td>12</td>
<td>20</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>16&quot; LL</td>
<td>12</td>
<td>20</td>
<td>30</td>
<td>42</td>
</tr>
<tr>
<td>16&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>18&quot; TL</td>
<td>9</td>
<td>15</td>
<td>23</td>
<td>32</td>
</tr>
<tr>
<td>18&quot; LL</td>
<td>9</td>
<td>15</td>
<td>23</td>
<td>32</td>
</tr>
<tr>
<td>18&quot; BL</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>
### Table 36 – 24F-1.7E (V4) Southern Pine Glued Laminated Timber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>3-1/2&quot; Width</th>
<th>5-1/2&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Depth (in.)</td>
<td>Depth (in.)</td>
</tr>
<tr>
<td>6'</td>
<td>11-1/4</td>
<td>11-1/4</td>
</tr>
<tr>
<td>TL</td>
<td>2110</td>
<td>2187</td>
</tr>
<tr>
<td>LL</td>
<td>2110</td>
<td>2187</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>8'</td>
<td>1454</td>
<td>1503</td>
</tr>
<tr>
<td>TL</td>
<td>1454</td>
<td>1503</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>10'</td>
<td>958</td>
<td>1099</td>
</tr>
<tr>
<td>TL</td>
<td>958</td>
<td>1099</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>12'</td>
<td>643</td>
<td>695</td>
</tr>
<tr>
<td>TL</td>
<td>643</td>
<td>695</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>14'</td>
<td>407</td>
<td>441</td>
</tr>
<tr>
<td>TL</td>
<td>407</td>
<td>441</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>16'</td>
<td>210</td>
<td>227</td>
</tr>
<tr>
<td>TL</td>
<td>210</td>
<td>227</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>18'</td>
<td>189</td>
<td>205</td>
</tr>
<tr>
<td>TL</td>
<td>189</td>
<td>205</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>20'</td>
<td>136</td>
<td>148</td>
</tr>
<tr>
<td>TL</td>
<td>136</td>
<td>148</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>22'</td>
<td>100</td>
<td>109</td>
</tr>
<tr>
<td>TL</td>
<td>100</td>
<td>109</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>24'</td>
<td>81</td>
<td>88</td>
</tr>
<tr>
<td>TL</td>
<td>81</td>
<td>88</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>26'</td>
<td>85</td>
<td>102</td>
</tr>
<tr>
<td>TL</td>
<td>85</td>
<td>102</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>28'</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>TL</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>30'</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>TL</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>32'</td>
<td>110</td>
<td>168</td>
</tr>
<tr>
<td>TL</td>
<td>110</td>
<td>168</td>
</tr>
<tr>
<td>LL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>34'</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>TL</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>36'</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>TL</td>
<td>77</td>
<td>77</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>38'</td>
<td>95</td>
<td>93</td>
</tr>
<tr>
<td>TL</td>
<td>95</td>
<td>93</td>
</tr>
<tr>
<td>BL</td>
<td>3.0</td>
<td>4.5</td>
</tr>
</tbody>
</table>

Notes for Table 36: Allowable Roof Loads (plf) - 1.25 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/2" and 5-1/2"-wide beams, respectively, and when a glued laminated timber's span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/8"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/2"-wide beams by 0.857 and 0.893, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/8"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/2" wide beams by 0.909 or 0.932, respectively. Then check the required bearing length (BL).
<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>6&quot;</th>
<th>8&quot;</th>
<th>10&quot;</th>
<th>12&quot;</th>
<th>14&quot;</th>
<th>16&quot;</th>
<th>18&quot;</th>
<th>20&quot;</th>
<th>22&quot;</th>
<th>24&quot;</th>
<th>26&quot;</th>
<th>28&quot;</th>
<th>30&quot;</th>
<th>32&quot;</th>
<th>34&quot;</th>
<th>36&quot;</th>
<th>38&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1/8&quot; Width</td>
<td>TL</td>
<td>LL</td>
<td>BL</td>
<td>TL</td>
<td>LL</td>
<td>BL</td>
<td>TL</td>
<td>LL</td>
<td>BL</td>
<td>TL</td>
<td>LL</td>
<td>BL</td>
<td>TL</td>
<td>LL</td>
<td>BL</td>
<td>TL</td>
<td>LL</td>
</tr>
<tr>
<td>1.25 Load Duration Factor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8-1/4</td>
<td>1619</td>
<td>1988</td>
<td>2398</td>
<td>2855</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>9-5/8</td>
<td>1619</td>
<td>1988</td>
<td>2398</td>
<td>2855</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11&quot;</td>
<td>1619</td>
<td>1988</td>
<td>2398</td>
<td>2855</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>12-3/8</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>13-3/4</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>15-1/8</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>16-1/2</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>17-7/8</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>19-1/4</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>20-5/8</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>22-1/8</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>24-1/4</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>26-3/4</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>28-1/2</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>30&quot;</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>32&quot;</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>34&quot;</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>36&quot;</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
<tr>
<td>38&quot;</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
</tr>
</tbody>
</table>

(See Requirements for Use on page 23, Key and Example on page 34, and Notes on page 34 and this page)

Notes for Table 37: Allowable Roof Loads (plf) - 1.25 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per linear foot (plf) for the 3-1/8" and 5-1/8"-wide beams, respectively, and when a glued laminated timber's span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/2"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/8"-wide beams by 0.96 and 1.12, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/2"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/8" wide beams by 0.976 or 1.073, respectively. Then check the required bearing length (BL).
### Table 38 – 24F-1.8E (V3) Southern Pine Glued Laminated Timber

<table>
<thead>
<tr>
<th>Clear Opening</th>
<th>Depth (in.)</th>
<th>3-1/8&quot; Width</th>
<th>5-1/8&quot; Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>6&quot; TL</td>
<td>1826</td>
<td>2421</td>
<td>3052</td>
</tr>
<tr>
<td>6&quot; LL</td>
<td>1826</td>
<td>2421</td>
<td>3052</td>
</tr>
<tr>
<td>6&quot; BL</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>8&quot; TL</td>
<td>1058</td>
<td>1419</td>
<td>1824</td>
</tr>
<tr>
<td>8&quot; LL</td>
<td>1058</td>
<td>1419</td>
<td>1824</td>
</tr>
<tr>
<td>8&quot; BL</td>
<td>3.0</td>
<td>4.5</td>
<td>4.5</td>
</tr>
<tr>
<td>10&quot; TL</td>
<td>684</td>
<td>924</td>
<td>1195</td>
</tr>
<tr>
<td>10&quot; LL</td>
<td>563</td>
<td>881</td>
<td>1195</td>
</tr>
<tr>
<td>10&quot; BL</td>
<td>1.5</td>
<td>3.0</td>
<td>4.5</td>
</tr>
<tr>
<td>12&quot; TL</td>
<td>434</td>
<td>646</td>
<td>839</td>
</tr>
<tr>
<td>12&quot; LL</td>
<td>330</td>
<td>518</td>
<td>765</td>
</tr>
<tr>
<td>12&quot; BL</td>
<td>1.5</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

#### Notes for Table 38: Allowable Roof Loads (plf) – 1.25 Load Duration Factor

- For practicality, allowable roof loads are omitted from the table when they exceed 3,000 and 6,000 pounds per lineal foot (plf) for the 3-1/8" and 5-1/8"-wide beams, respectively, and when a glued laminated timber's span-to-depth ratio exceeds 30.
- To determine allowable roof loads for 3- and 3-1/2"-wide glued laminated timber beams, multiply tabulated total loads (TL) and live loads (LL) for 3-1/8"-wide beams by 0.96 and 1.12, respectively. Then check the required bearing length (BL).
- To determine allowable roof loads for 5- and 5-1/2"-wide glued laminated timber beams, multiply the TL and LL values for 5-1/8" wide beams by 0.976 or 1.073, respectively. Then check the required bearing length (BL).
As trees grow, they remove and store carbon from the atmosphere. Managed forests increase carbon storage by harvesting slower growing trees, and replacing them with younger trees. Wood products, such as lumber and furniture, store carbon during their life cycle. They are 50 percent carbon by weight. Recycling wood products allows them to continue to store carbon indefinitely.

How Does Wood Reduce Carbon?

Wood products require less energy to manufacture – meaning fewer greenhouse gases, like CO₂. And trees use CO₂ to grow, changing greenhouse gases into the building blocks we know as wood. That's why wood products are increasingly being recognized as tools to combat climate change.

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

Life cycle of wood building products

- **Sustainable Resources**: Wood products are produced from trees, a naturally renewable resource. More wood is grown each year in the U.S. than is harvested.
- **Responsible Manufacturing**: Waste is virtually eliminated when trees are used to make wood products. Bark, trims and sawdust are used as an energy source to help power wood production facilities. It takes far less energy and fossil fuels to produce wood products than to manufacture concrete and steel.
- **Quality Construction**: As a building material, wood offers a unique combination of benefits, including strength, affordability, ease-of-use and environmental superiority.
- **Long Service Life**: The durability of wood products contributes to the long life of a home. Wood products also store carbon, reducing the amount of carbon in the atmosphere.
- **Renovation Upgrade**: The flexibility of wood makes renovating a home easy and affordable. Wood is builder-friendly, as well as environmentally friendly. Wood also enhances the aesthetic value of a home when used as flooring, cabinetry, furniture and molding.
- **Recycle Renew**: At the end of their initial service life, wood products are easily recycled for other uses. Wood contributes fewer greenhouse gas emissions than non-renewable steel and concrete.
MacDonald’s Global Flagship in Chicago

For its latest Chicago-based flagship restaurant, the three-quarters-of-a-century old fast-food chain is shaking off its once plastic-clad bright colored interiors for an exposed wood and timber design, along with more sustainable, naturally hued materials.

// Read More

The latest in wood innovation and research.

Driven by a passion for wood, and the forests it comes from, we believe wood makes a difference in the built environment—a difference that will fundamentally change the way we build.

Opportunities for Wood

Wood is a disruptive force across building segments.

// Read More

Building Better

Wood technology and systems are pioneering better places for us to live and work.

// Read More

Products and Systems

Modern wood products are making entire new classes of buildings possible.

// Read More

Performance

Wood is a high-performance material supported by code in fire, seismic, and high wind situations.

// Read More

Visit ThinkWood.com
This publication is made possible by the following Southern Pine lumber manufacturers, all members of the Southern Forest Products Association:

Almond Brothers Lumber Company  Lampe & Malphrus Lumber Company
Anthony Timberlands, Inc.  LaSalle Lumber Company, LLC
Beasley Forest Products  McShan Lumber Company
Canfor Southern Pine  Swift Lumber, Inc.
Conifex El Dorado, Inc.  PotlatchDeltic Corporation
Edwards Wood Products  West Fraser, Inc.
Harrigan Lumber Company, Inc.  The Westervelt Company
Hood Industries, Inc.  Weyerhaeuser Company
Interfor U.S. Inc.  Ray White Lumber Company

Visit SFPA.org

YOUR LUMBER INFORMATION CENTER
Additional Resources

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

**Southern Pine Use Guide**
- grade descriptions, design values, applications, specification guidelines

**Southern Pine Maximum Spans for Joists & Rafters**
- span tables, design criteria

**Pressure-Treated Southern Pine**
- preservative types, standards, specifications, applications