Southern Pine Size Selection Tables

NEW SOUTHERN PINE DESIGN VALUES

Requirements for Use of Size Selection Tables

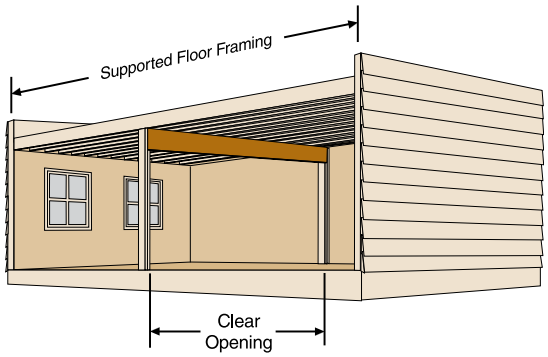
1. These tables are for gravity loads only. Consult a registered design professional for wind and seismic load analysis and design.
2. All tables are based on uniformly distributed loads only. Other loads, such as concentrated or unbalanced snow loads, have not been considered and must be analyzed separately.
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 (4) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed. For other bearing lengths, use the *Allowable Floor Load Tables* (Tables 21-26).

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.



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

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

Grade	Clear Opening	Span of Supported Floor Framing (Sum of joist spans from both sides of beam)						
		20'	24'	26'	28'	30'	32'	36'
No. 1	8'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	9'	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	10'	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	11'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 14*	*5-1/2 x 14*
	12'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*
	13'	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*
	14'	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*
	15'	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*
	16'	*3-1/2 x 14*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 19-1/4*
	17'	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 18*	*5-1/2 x 19-1/4*
	18'	*3-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 18*	*5-1/2 x 19-1/4*	*5-1/2 x 20-5/8* *
No. 2	8'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	9'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	3-1/2 x 14
	10'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*
	11'	(4) 2 x 12s	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*5-1/2 x 14*
	12	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*
	13'	*3-1/2 x 11-1/4*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*
	14'	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*
	15'	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*
	16'	*3-1/2 x 14*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 19-1/4*
	17'	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 18*	*5-1/2 x 19-1/4*
	18'	*3-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 18*	*5-1/2 x 19-1/4*	*5-1/2 x 20-5/8* *
No. 3	8'	(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 11-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*
	9'	(4) 2 x 12s	*3-1/2 x 9-1/4*	*3-1/2 x 11-1/4*	*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 14*
	10'	*3-1/2 x 9-1/4*	*3-1/2 x 11-1/4*	*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 14*	*3-1/2 x 14*
	11'	*3-1/2 x 9-1/2*	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*5-1/2 x 14*
	12'	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*
	13'	*3-1/2 x 11-1/4*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*
	14'	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*
	15'	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*
	16'	*3-1/2 x 14*	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 19-1/4*
	17'	*3-1/2 x 16*	*5-1/2 x 14*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 18*	*5-1/2 x 19-1/4*
	18'	*3-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 16*	*5-1/2 x 18*	*5-1/2 x 18*	*5-1/2 x 19-1/4*	*5-1/2 x 20-5/8* *

(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)

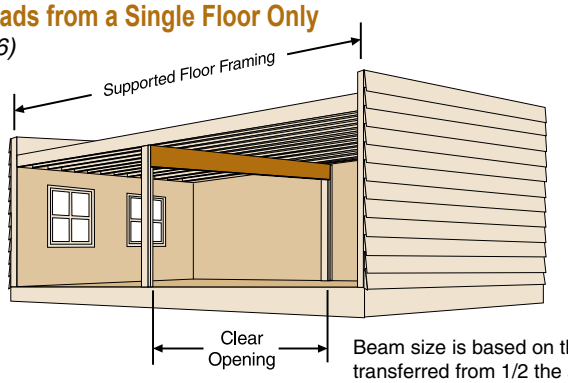
Live Load = 40 psf

Dead Load = 10 psf

Load Duration Factor = 1.00

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

Clear Opening = 10'



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

Southern Pine Beam Selected *(from Table 13)*: No.1 Southern Pine Lumber - (3) 2x12s or
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)

Floor Edge Beams

Notes for Table 14: Floor Edge Beams

- Table 14 applies to beams carrying only uniformly distributed floor loads from a single floor. For beams supporting additional uniformly distributed loads from a wall and upper floor, use the *Allowable Floor Load Tables* (Tables 21-26).
- 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)

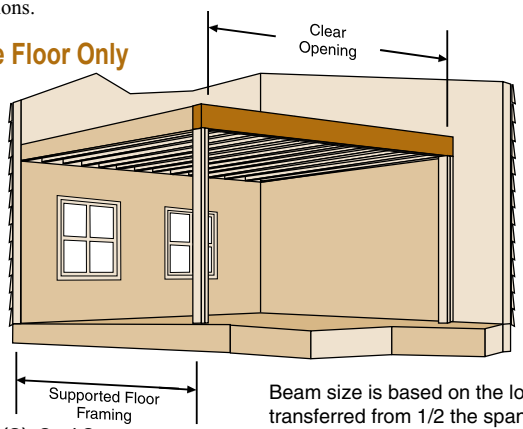
Live Load = 40 psf

Dead Load = 10 psf

Load Duration Factor = 1.00

Span of Supported Floor Framing = 14'

Clear Opening = 14'



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

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

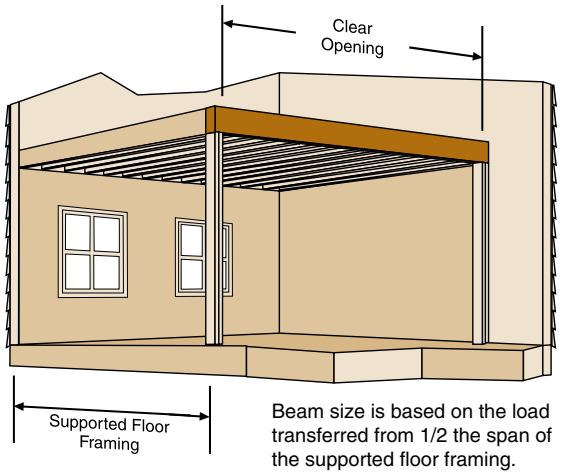
(See *Requirements for Use* on page 7, *Key* on page 18, and *Notes* and *Example* on this page)

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) 2x12s no longer meet design parameters. A 3.0" bearing length is assumed. For other bearing lengths, use the *Allowable Floor Load Tables* (Tables 21-26).

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.



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

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

Grade	Clear Opening	Span of Supported Floor Framing						
		10'	12'	14'	16'	18'	20'	22'
No. 1	10'	(2) 2 x 10s	(2) 2 x 12s	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s
	11'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s
	12'	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	13'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	14'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11-7/8*	*3-1/2 x 14*
	15'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*
	16'	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*
	17'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*
	18'	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*
	19'	(4) 2 x 12s	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 18*
	20	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 18*	*3-1/2 x 18*
No. 2	10'	(2) 2 x 12s	(2) 2 x 12s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s
	11'	(3) 2 x 10s	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s
	12'	(3) 2 x 10s	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*
	13'	(3) 2 x 12s	(3) 2 x 12s	(4) 2 x 12s	*(4) 2 x 12s*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*
	14'	(3) 2 x 12s	(4) 2 x 12s	(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 14*
	15'	(4) 2 x 12s	(4) 2 x 12s	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*
	16'	(4) 2 x 12s	*3-1/2 x 11-1/4*	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*
	17'	*3-1/2 x 11-1/4*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*
	18'	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*
	19'	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 18*
	20'	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 18*	*3-1/2 x 18*
No. 3	10'	(3) 2 x 12s	(3) 2 x 12s	(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*
	11'	(3) 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 9-1/2*
	12'	(4) 2 x 12s	*3-1/2 x 9-1/4*	*3-1/2 x 9-1/4*	*3-1/2 x 9-1/2*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*
	13'	*3-1/2 x 9-1/4*	*3-1/2 x 9-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*
	14'	*3-1/2 x 9-1/4*	*3-1/2 x 11-1/4*	*3-1/2 x 11-1/4*	*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 14*
	15'	*3-1/2 x 11-1/4*	*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 14*	*3-1/2 x 14*	*3-1/2 x 14*
	16'	*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 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*
	17'	*3-1/2 x 11-1/4*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*
	18'	*3-1/2 x 11-7/8*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*
	19'	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 18*
	20'	*3-1/2 x 14*	*3-1/2 x 14*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 16*	*3-1/2 x 18*	*3-1/2 x 18*

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