

Trus Joist® TJI® Ceiling Joist Span Tables

The following information is intended to assist designers in the specification of TJI® joists in ceiling joist applications as prescribed in 2015 IRC Chapter 8. It is the responsibility of the designer of record to confirm the conditions of the ceiling joist to be within the limitations the tables provided in this document. For complete design information regarding TJI® joists, reference *Specifier's Guide for TJI® Joists* ([TJ-4000](#)).

Ceiling Joists Supporting Attic Load

Table 1 provides maximum clear spans for TJI® joists supporting “uninhabitable attics with limited storage” as defined in 2015 IRC Table R301.5. The values in the table have been calculated assuming no additional thrust load is applied to the joist (see Ceiling Joists Resisting Attic Load and Roof Thrust Load).

TABLE 1: TJI® CEILING JOIST SUPPORTING ATTIC LOAD^[1]

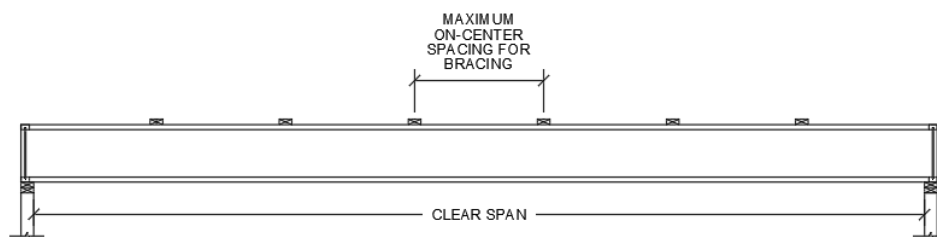
Joist Depth	TJI® Series	Maximum Clear Span ^{[2][3][4]}							
		20 PSF (Live) \ 10 PSF (Dead)				40 PSF (Live) \ 10 PSF (Dead)			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9 1/2"	110	22'-3"	20'-1"	18'-11"	17'-6"	17'-6"	15'-10"	14'-10"	13'-8"
	210	23'-6"	21'-3"	20'-0"	18'-6"	18'-6"	16'-8"	15'-8"	14'-5"
	230	24'-4"	22'-0"	20'-8"	19'-1"	19'-1"	17'-3"	16'-2"	14'-11"
11 7/8"	110	26'-7"	24'-1"	22'-7"	20'-5"	20'-11"	18'-11"	17'-8"	15'-9"
	210	28'-1"	25'-5"	23'-10"	22'-1"	22'-1"	19'-11"	18'-8"	17'-3"
	230	29'-0"	26'-3"	24'-8"	22'-9"	22'-9"	20'-7"	19'-4"	17'-10"
	360	30'-10"	27'-11"	26'-2"	24'-3"	24'-3"	21'-11"	20'-6"	18'-11"
	560	35'-6"	32'-1"	30'-2"	27'-11"	27'-11"	25'-2"	23'-7"	21'-10"
14"	110	30'-3"	27'-2"	24'-10"	22'-2"	23'-10"	21'-0"	19'-2"	17'-2"
	210	31'-11"	28'-11"	27'-2"	24'-4"	25'-1"	22'-9"	21'-1"	18'-10"
	230	32'-11"	29'-10"	28'-0"	25'-8"	25'-11"	23'-5"	22'-0"	19'-10"
	360	35'-0"	31'-9"	29'-9"	27'-7"	27'-7"	24'-11"	23'-4"	21'-5"
	560	40'-3"	36'-5"	34'-3"	31'-8"	31'-8"	28'-7"	26'-10"	24'-9"
16"	110	33'-7"	29'-1"	26'-7"	23'-9"	26'-0"	22'-6"	20'-7"	18'-1"
	210	35'-5"	31'-11"	29'-1"	26'-0"	27'-10"	24'-8"	22'-6"	19'-11"
	230	36'-6"	33'-1"	30'-8"	27'-5"	28'-9"	26'-0"	23'-9"	21'-1"
	360	38'-10"	35'-2"	33'-0"	30'-6"	30'-6"	27'-7"	25'-10"	21'-5"
	560	44'-6"	40'-4"	37'-10"	35'-1"	35'-1"	31'-8"	29'-9"	25'-2"

[1] Uniform loads only.

[2] Simple span only; minimum end bearing length is 2 1/4".

[3] Total load deflection limited to L/240 and live load deflection limited to L/360; no composite action considered.

[4] Maximum on-center spacing for bracing of TJI® 110 is 32" o.c.; for bracing of all other TJI® joists use 36" o.c.



FOR TAPERED END CUT CEILING JOISTS
SUPPORTING ATTIC LOAD ONLY (NO
THRUST), REFER TO **TB-805**

Ceiling Joists Supporting Attic Load and Roof Thrust Load

Table 2 provides maximum clear spans for TJI® joists supporting the attic loads from Table 1 as well as a roof thrust load as per the IRC prescribed connection between the rafters and the ceiling joists. The nailing requirements for the rafter-to-ceiling joist connection are included in 2015 IRC Table R802.5.1(9). Prior to fastening the rafter-to-ceiling joist connection, the TJI® joist must be reinforced in order to accommodate the end slope cut due to the rafters (see TJI® Rafter Cut Reinforcement).

TABLE 2: TJI® CEILING JOIST SUPPORTING ATTIC LOAD AND ROOF THRUST LOAD^{[1][2][3][4]}

Joist Depth	TJI® Series	Maximum Clear Span ^{[5][6][7]}							
		20 PSF (Live) \ 10 PSF (Dead)				40 PSF (Live) \ 10 PSF (Dead)			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9 1/2"	110	22'-3"	20'-1"	18'-11"	17'-6"	17'-6"	15'-10"	14'-10"	13'-8"
	210	23'-6"	21'-3"	20'-0"	18'-6"	18'-6"	16'-8"	15'-8"	14'-5"
	230	24'-4"	22'-0"	20'-8"	19'-1"	19'-1"	17'-3"	16'-2"	14'-11"
11 7/8"	110	26'-7"	24'-1"	22'-6"	20'-1"	20'-11"	18'-11"	17'-5"	15'-6"
	210	28'-1"	25'-5"	23'-10"	22'-0"	22'-1"	19'-11"	18'-8"	17'-0"
	230	29'-0"	26'-3"	24'-8"	22'-9"	22'-9"	20'-7"	19'-4"	17'-10"
	360	30'-10"	27'-11"	26'-2"	24'-3"	24'-3"	21'-11"	20'-6"	18'-11"
	560	35'-6"	32'-1"	30'-2"	27'-11"	27'-11"	25'-2"	23'-7"	21'-10"
14"	110	30'-3"	26'-10"	24'-5"	21'-9"	23'-10"	20'-9"	18'-11"	16'-10"
	210	31'-11"	28'-11"	26'-10"	23'-11"	25'-1"	22'-9"	20'-9"	18'-6"
	230	32'-11"	29'-10"	28'-0"	25'-3"	25'-11"	23'-5"	21'-11"	19'-6"
	360	35'-0"	31'-9"	29'-9"	27'-7"	27'-7"	24'-11"	23'-4"	21'-5"
	560	40'-3"	36'-5"	34'-3"	31'-8"	31'-8"	28'-7"	26'-10"	24'-9"
16"	110	33'-2"	28'-8"	26'-1"	23'-3"	25'-8"	22'-2"	20'-2"	18'-0"
	210	35'-5"	31'-5"	28'-8"	25'-7"	27'-10"	24'-4"	22'-2"	19'-9"
	230	36'-0" [8]	33'-1"	30'-3"	27'-0"	28'-9"	25'-8"	23'-5"	20'-10"
	360	36'-0" [8]	35'-2"	33'-0"	30'-6"	30'-6"	27'-7"	25'-10"	21'-5"
	560	36'-0" [8]	36'-0" [8]	36'-0" [8]	35'-1"	35'-1"	31'-8"	29'-9"	25'-2"

[1] Uniform loads only.

[2] Struts or posts supporting roof framing or purlin lines must not be braced to joists.

[3] Roof thrust load calculated based on roof load = 30 psf (Roof Live/Snow) \ 10 psf (Dead).

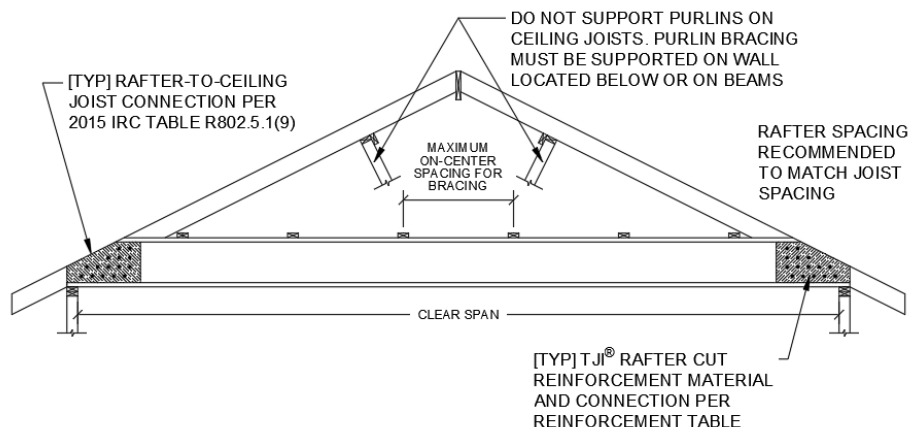
[4] Roof pitch 6:12 to 12:12. Maximum roof overhang is 24".

[5] Simple span only; minimum end bearing length is 2 1/4".

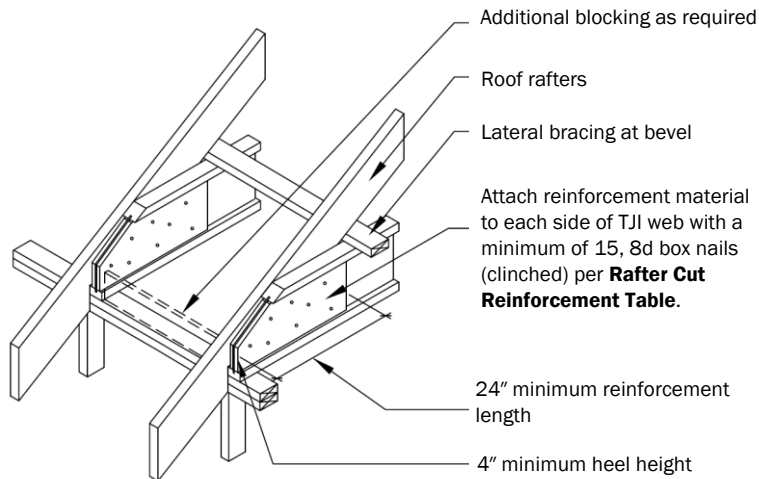
[6] Total load deflection limited to L/240 and live load deflection limited to L/360; no composite action considered.

[7] Maximum on-center spacing for bracing of TJI® 110 is 32" o.c.; for bracing of all other TJI® joists use 36" o.c.

[8] Maximum clear span limited by scope of 2015 IRC Table R802.5.1(9).



TJI® Rafter Cut Reinforcement



Rafter Cut Reinforcement Table		
TJI® Series	Material ^[1]	Nail
110	3/4"	15, 8d box (0.113" x 2 1/4") or larger
210	7/8"	
230		
360		
560	1 1/2" thick TimberStrand® LSL ^[2]	15, 16d (0.135" x 3 1/2") or larger

[1] Maintain 1/8" gap between top flange and reinforcement.
[2] TimberStrand® LSL may be re-sawn as per [TB-305](#).

The maximum clear spans in Table 2 consider an axial tension load resulting from the thrust force due to the roof rafter being fastened to the ceiling joist. Reference 2015 IRC Table R802.5.1(9) for additional design requirements of rafter-to-ceiling joist connections.