



# TJI® 110 • TJI® 210 TJI® 230 • TJI® 360 TJI® 560 JOISTS

Featuring Trus Joist® Silent Floor® Joists

- Uniform and Predictable
- Lightweight for Fast Installation
- Resource Efficient
- Resists Bowing, Twisting, and Shrinking
- Significantly Reduces Callbacks
- Available in Long Lengths
- Limited Product Warranty



FLOOR SOLUTIONS

ROOF SOLUTIONS



## About This Guide

iLevel provides products for use in residential, multi-family, and light commercial construction. The products in this guide are readily available through our nationwide network of distributors and dealers. For more information on other applications or iLevel products, contact your iLevel representative.

## Why Choose iLevel® Trus Joist® TJI® Joists?

- Engineered for strength and consistency
- Efficient installation saves time and labor
- Longer lengths allow more versatile floor plans
- Less jobsite waste
- Fewer red tags and callbacks



## TJI® Joist Available Sizes

Depending on the series you choose, TJI® joists are available in the following sizes:

**Flange Widths:** 1<sup>3</sup>/<sub>4</sub>" , 2<sup>1</sup>/<sub>16</sub>" , 2<sup>5</sup>/<sub>16</sub>" , and 3<sup>1</sup>/<sub>2</sub>"

**Depths:** 9<sup>1</sup>/<sub>2</sub>" , 11<sup>7</sup>/<sub>8</sub>" , 14" , and 16"

Code Evaluations: See ICC ES ESR-1153; ESR-1387

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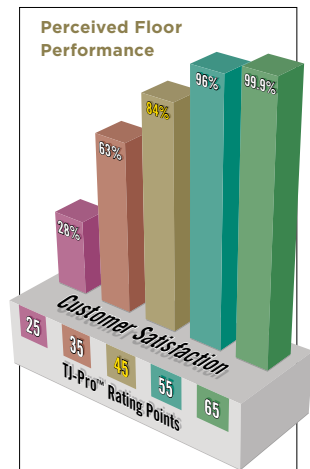
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 SFI-00008

## TJ-Pro™ Ratings Take the Guesswork Out of Floor Performance

iLevel® Trus Joist® TJ-Pro™ Ratings are generated by a sophisticated computer model designed to predict floor performance and evaluate the relationship between the cost and the “feel” of any given floor system. The methodology is based on extensive laboratory research, more than one million installations, and the combined expertise of some of the best engineers in the field. TJ-Pro™ Ratings go beyond deflection criteria to consider job-specific needs and expectations. In many cases, using TJ-Pro™ Ratings will offer a system that improves performance while actually reducing costs!

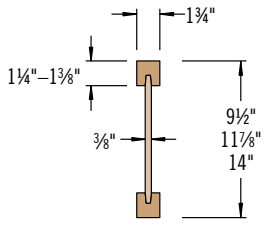
## TJ-Pro™ Rating Advantages

- Works as part of iLevel® Forte® and Javelin® software
- Provides a method for predicting floor performance
- Takes perceptions of the homeowner into account
- Provides cost comparison

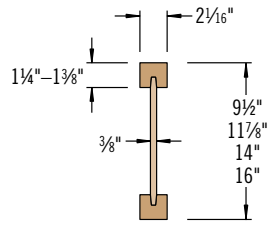


How do most people perceive a floor assembly with a TJ-Pro™ Rating of 45 points?  
 84% find it good to excellent.

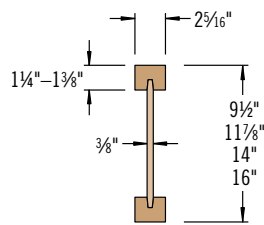
# DESIGN PROPERTIES



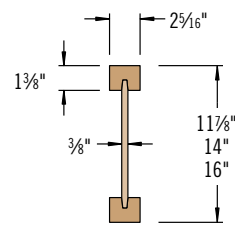
TJI® 110 Joists



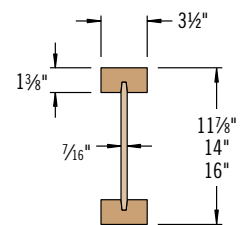
TJI® 210 Joists



TJI® 230 Joists



TJI® 360 Joists



TJI® 560 Joists

*Some TJI® joist series may not be available in your region.  
Contact your iLevel representative for information.*

## Design Properties (100% Load Duration)

Depth	TJI®	Basic Properties				Reaction Properties					
		Joist Weight (lbs/ft)	Maximum Resistive Moment <sup>(1)</sup> (ft-lbs)	Joist Only EI x 10 <sup>6</sup> (in. <sup>2</sup> -lbs)	Maximum Vertical Shear (lbs)	1 3/4" End Reaction (lbs)	3 1/2" End Reaction (lbs)	3 1/2" Intermediate Reaction (lbs)		5 1/4" Intermediate Reaction (lbs)	
								No Web Stiffeners	With Web Stiffeners	No Web Stiffeners	With Web Stiffeners
9 1/2"	110	2.3	2,500	157	1,220	910	1,220	1,935	N.A.	2,350	N.A.
	210	2.6	3,000	186	1,330	1,005	1,330	2,145	N.A.	2,565	N.A.
	230	2.7	3,330	206	1,330	1,060	1,330	2,410	N.A.	2,790	N.A.
11 1/8"	110	2.5	3,160	267	1,560	910	1,375	1,935	2,295	2,350	2,705
	210	2.8	3,795	315	1,655	1,005	1,460	2,145	2,505	2,565	2,925
	230	3.0	4,215	347	1,655	1,060	1,485	2,410	2,765	2,790	3,150
	360	3.0	6,180	419	1,705	1,080	1,505	2,460	2,815	3,000	3,360
	560	4.0	9,500	636	2,050	1,265	1,725	3,000	3,475	3,455	3,930
14"	110	2.8	3,740	392	1,860	910	1,375	1,935	2,295	2,350	2,705
	210	3.1	4,490	462	1,945	1,005	1,460	2,145	2,505	2,565	2,925
	230	3.3	4,990	509	1,945	1,060	1,485	2,410	2,765	2,790	3,150
	360	3.3	7,335	612	1,955	1,080	1,505	2,460	2,815	3,000	3,360
	560	4.2	11,275	926	2,390	1,265	1,725	3,000	3,475	3,455	3,930
16"	210	3.3	5,140	629	2,190	1,005	1,460	2,145	2,505	2,565	2,925
	230	3.5	5,710	691	2,190	1,060	1,485	2,410	2,765	2,790	3,150
	360	3.5	8,405	830	2,190	1,080	1,505	2,460	2,815	3,000	3,360
	560	4.5	12,925	1,252	2,710	1,265	1,725	3,000	3,475	3,455	3,930

(1) **Caution:** Do not increase joist moment design properties by a repetitive member use factor.

## General Notes

- Design reaction includes all loads on the joist. Design shear is computed at the inside face of supports and includes all loads on the span(s). Allowable shear may sometimes be increased at interior supports in accordance with ICC ES ESR-1153, and these increases are reflected in span tables.

- The following formulas approximate the uniform load deflection of Δ (inches):

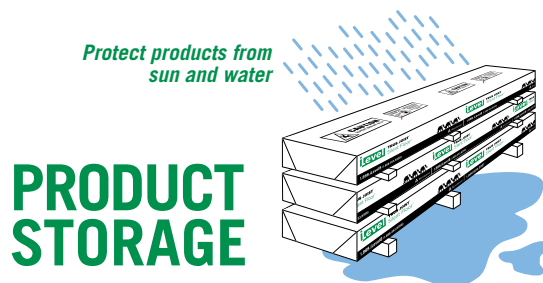
**For TJI® 110, 210, 230, and 360 Joists**

$$\Delta = \frac{22.5 wL^4}{EI} + \frac{2.67 wL^2}{d \times 10^5}$$

**For TJI® 560 Joists**

$$\Delta = \frac{22.5 wL^4}{EI} + \frac{2.29 wL^2}{d \times 10^5}$$

- w = uniform load in pounds per linear foot
- L = span in feet
- d = out-to-out depth of the joist in inches
- EI = value from table above



**CAUTION:**  
Wrap is slippery when wet or icy

Use support blocks at 10' on-center to keep products out of mud and water

*TJI® joists are intended for dry-use applications*

# FLOOR SPAN TABLES AND MATERIAL WEIGHTS

## L/480 Live Load Deflection

Depth	TJI®	40 PSF Live Load / 10 PSF Dead Load				40 PSF Live Load / 20 PSF Dead Load			
		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.
9½"	110	16'-11"	15'-6"	14'-7"	13'-7"	16'-11"	15'-6"	14'-3"	12'-9"
	210	17'-9"	16'-3"	15'-4"	14'-3"	17'-9"	16'-3"	15'-4"	14'-0"
	230	18'-3"	16'-8"	15'-9"	14'-8"	18'-3"	16'-8"	15'-9"	14'-8"
11⅞"	110	20'-2"	18'-5"	17'-4"	15'-9" <sup>(1)</sup>	20'-2"	17'-8"	16'-1" <sup>(1)</sup>	14'-4" <sup>(1)</sup>
	210	21'-1"	19'-3"	18'-2"	16'-11"	21'-1"	19'-3"	17'-8"	15'-9" <sup>(1)</sup>
	230	21'-8"	19'-10"	18'-8"	17'-5"	21'-8"	19'-10"	18'-7"	16'-7" <sup>(1)</sup>
	360	22'-11"	20'-11"	19'-8"	18'-4"	22'-11"	20'-11"	19'-8"	17'-10" <sup>(1)</sup>
	560	26'-1"	23'-8"	22'-4"	20'-9"	26'-1"	23'-8"	22'-4"	20'-9" <sup>(1)</sup>
14"	110	22'-10"	20'-11"	19'-2"	17'-2" <sup>(1)</sup>	22'-2"	19'-2"	17'-6" <sup>(1)</sup>	15'-0" <sup>(1)</sup>
	210	23'-11"	21'-10"	20'-8"	18'-10" <sup>(1)</sup>	23'-11"	21'-1"	19'-2" <sup>(1)</sup>	16'-7" <sup>(1)</sup>
	230	24'-8"	22'-6"	21'-2"	19'-9" <sup>(1)</sup>	24'-8"	22'-2"	20'-3" <sup>(1)</sup>	17'-6" <sup>(1)</sup>
	360	26'-0"	23'-8"	22'-4"	20'-9" <sup>(1)</sup>	26'-0"	23'-8"	22'-4" <sup>(1)</sup>	17'-10" <sup>(1)</sup>
	560	29'-6"	26'-10"	25'-4"	23'-6"	<b>29'-6"</b>	<b>26'-10"</b>	25'-4" <sup>(1)</sup>	20'-11" <sup>(1)</sup>
16"	210	26'-6"	24'-3"	22'-6" <sup>(1)</sup>	19'-11" <sup>(1)</sup>	26'-0"	22'-6" <sup>(1)</sup>	20'-7" <sup>(1)</sup>	16'-7" <sup>(1)</sup>
	230	27'-3"	24'-10"	23'-6"	21'-1" <sup>(1)</sup>	<b>27'-3"</b>	23'-9"	21'-8" <sup>(1)</sup>	17'-6" <sup>(1)</sup>
	360	28'-9"	26'-3"	24'-8" <sup>(1)</sup>	21'-5" <sup>(1)</sup>	<b>28'-9"</b>	26'-3" <sup>(1)</sup>	22'-4" <sup>(1)</sup>	17'-10" <sup>(1)</sup>
	560	32'-8"	29'-8"	28'-0"	25'-2" <sup>(1)</sup>	<b>32'-8"</b>	<b>29'-8"</b>	26'-3" <sup>(1)</sup>	20'-11" <sup>(1)</sup>

## L/360 Live Load Deflection (Minimum Criteria per Code)

Depth	TJI®	40 PSF Live Load / 10 PSF Dead Load				40 PSF Live Load / 20 PSF Dead Load			
		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.
9½"	110	18'-9"	17'-2"	15'-8"	14'-0"	18'-1"	15'-8"	14'-3"	12'-9"
	210	19'-8"	18'-0"	17'-0"	15'-4"	19'-8"	17'-2"	15'-8"	14'-0"
	230	20'-3"	18'-6"	17'-5"	16'-2"	<b>20'-3"</b>	18'-1"	16'-6"	14'-9"
11⅞"	110	22'-3"	19'-4"	17'-8"	15'-9" <sup>(1)</sup>	20'-5"	17'-8"	16'-1" <sup>(1)</sup>	14'-4" <sup>(1)</sup>
	210	23'-4"	21'-2"	19'-4"	17'-3" <sup>(1)</sup>	<b>22'-4"</b>	19'-4"	17'-8"	15'-9" <sup>(1)</sup>
	230	24'-0"	21'-11"	20'-5"	18'-3"	<b>23'-7"</b>	20'-5"	18'-7"	16'-7" <sup>(1)</sup>
	360	25'-4"	23'-2"	21'-10"	20'-4" <sup>(1)</sup>	<b>25'-4"</b>	<b>23'-2"</b>	<b>21'-10"<sup>(1)</sup></b>	17'-10" <sup>(1)</sup>
	560	28'-10"	26'-3"	24'-9"	23'-0"	<b>28'-10"</b>	<b>26'-3"</b>	<b>24'-9"</b>	20'-11" <sup>(1)</sup>
14"	110	24'-4"	21'-0"	19'-2"	17'-2" <sup>(1)</sup>	22'-2"	19'-2"	17'-6" <sup>(1)</sup>	15'-0" <sup>(1)</sup>
	210	26'-6"	23'-1"	21'-1"	18'-10" <sup>(1)</sup>	24'-4"	21'-1"	19'-2" <sup>(1)</sup>	16'-7" <sup>(1)</sup>
	230	27'-3"	24'-4"	22'-2"	19'-10" <sup>(1)</sup>	<b>25'-8"</b>	22'-2"	20'-3" <sup>(1)</sup>	17'-6" <sup>(1)</sup>
	360	28'-9"	26'-3"	24'-9" <sup>(1)</sup>	21'-5" <sup>(1)</sup>	<b>28'-9"</b>	<b>26'-3"<sup>(1)</sup></b>	22'-4" <sup>(1)</sup>	17'-10" <sup>(1)</sup>
	560	32'-8"	29'-9"	28'-0"	25'-2" <sup>(1)</sup>	<b>32'-8"</b>	<b>29'-9"</b>	<b>26'-3"<sup>(1)</sup></b>	20'-11" <sup>(1)</sup>
16"	210	28'-6"	24'-8"	22'-6" <sup>(1)</sup>	19'-11" <sup>(1)</sup>	26'-0"	22'-6" <sup>(1)</sup>	20'-7" <sup>(1)</sup>	16'-7" <sup>(1)</sup>
	230	30'-1"	26'-0"	23'-9"	21'-1" <sup>(1)</sup>	<b>27'-5"</b>	23'-9"	21'-8" <sup>(1)</sup>	17'-6" <sup>(1)</sup>
	360	31'-10"	29'-0"	26'-10" <sup>(1)</sup>	21'-5" <sup>(1)</sup>	<b>31'-10"</b>	<b>26'-10"<sup>(1)</sup></b>	22'-4" <sup>(1)</sup>	17'-10" <sup>(1)</sup>
	560	36'-1"	32'-11"	31'-0" <sup>(1)</sup>	25'-2" <sup>(1)</sup>	<b>36'-1"</b>	<b>31'-6"<sup>(1)</sup></b>	26'-3" <sup>(1)</sup>	20'-11" <sup>(1)</sup>

(1) Web stiffeners are required at intermediate supports of continuous-span joists when the intermediate bearing length is *less* than 5½" and the span on either side of the intermediate bearing is greater than the following spans:

TJI®	40 PSF Live Load / 10 PSF Dead Load				40 PSF Live Load / 20 PSF Dead Load			
	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.
110	N.A.	N.A.	N.A.	15'-4"	N.A.	N.A.	16'-0"	12'-9"
210	N.A.	N.A.	21'-4"	17'-0"	N.A.	21'-4"	17'-9"	14'-2"
230	N.A.	N.A.	N.A.	19'-2"	N.A.	N.A.	19'-11"	15'-11"
360	N.A.	N.A.	24'-5"	19'-6"	N.A.	24'-5"	20'-4"	16'-3"
560	N.A.	N.A.	29'-10"	23'-10"	N.A.	29'-10"	24'-10"	19'-10"

▪ Long-term deflection under dead load, which includes the effect of creep, has not been considered. ***Bold italic*** spans reflect initial dead load deflection exceeding 0.33".

## How to Use These Tables

1. Determine the appropriate live load deflection criteria.
2. Identify the live and dead load condition.
3. Select on-center spacing.
4. Scan down the column until you meet or exceed the span of your application.
5. Select TJI® joist and depth.

*Live load deflection is not the only factor that affects how a floor will perform. To more accurately predict floor performance, use our TJI-Pro™ Ratings.*

## Material Weights

(Include TJI® weights in dead load calculations— see **Design Properties** table on page 3 for joist weights)

### Floor Panels

#### Southern Pine

½" plywood	1.7 psf
⅝" plywood	2.0 psf
¾" plywood	2.5 psf
1⅛" plywood	3.8 psf
½" OSB	1.8 psf
⅝" OSB	2.2 psf
¾" OSB	2.7 psf
⅞" OSB	3.1 psf
1⅛" OSB	4.1 psf

*Based on: Southern pine – 40 pcf for plywood, 44 pcf for OSB*

### Roofing

Asphalt shingles	2.5 psf
Wood shingles	2.0 psf
Clay tile	9.0 to 14.0 psf
Slate (¾" thick)	15.0 psf

### Roll or Batt Insulation (1" thick):

Rock wool	0.2 psf
Glass wool	0.1 psf

### Floor Finishes

Hardwood (nominal 1")	4.0 psf
Sheet vinyl	0.5 psf
Carpet and pad	1.0 psf
¾" ceramic or quarry tile	10.0 psf

### Concrete:

Regular (1")	12.0 psf
Lightweight (1")	8.0 to 10.0 psf
Gypsum concrete (¾")	6.5 psf

### Ceilings

Acoustical fiber tile	1.0 psf
½" gypsum board	2.2 psf
⅝" gypsum board	2.8 psf
Plaster (1" thick)	8.0 psf

## General Notes

- Tables are based on:
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Clear distance between supports (1¼" minimum end bearing).
- Assumed composite action with a single layer of 24" on-center span-rated, glue-nailed floor panels for deflection only. **Spans shall be reduced 6" when floor panels are nailed only.**
- Spans generated from iLevel® software may exceed the spans shown in these tables because software reflects actual design conditions.
- For multi-family applications and other loading conditions not shown, refer to iLevel® software or to the load table on page 5.

# FLOOR LOAD TABLE

## Floor—100% (PLF)

Depth	TJI®	Joist Clear Span																	
		8'		10'		12'		14'		16'		18'		20'		22'		24'	
		Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load
9½"	110	*	190	140	152	85	127	56	99	38	76								
	210	*	210	161	169	99	141	65	119	45	90								
	230	*	236	175	190	108	158	71	133	49	99								
11⅞"	110	*	190	*	152	*	127	92	109	63	95	45	76						
	210	*	210	*	169	*	141	106	121	74	106	53	92						
	230	*	236	*	190	*	158	116	136	80	119	58	102	43	83				
	360	*	241	*	193	*	162	136	139	95	121	69	108	51	97	39	78		
	560	*	294	*	236	*	197	*	169	138	148	101	132	76	119	58	108	45	91
14"	110	*	190	*	152	*	127	*	109	91	95	66	85						
	210	*	210	*	169	*	141	*	121	*	106	76	94	57	85				
	230	*	236	*	190	*	158	*	136	115	119	83	106	62	95	47	81		
	360	*	241	*	193	*	162	*	139	*	121	98	108	73	97	56	88	44	81
	560	*	294	*	236	*	197	*	169	*	148	*	132	107	119	83	108	65	99
16"	210	*	210	*	169	*	141	*	121	*	106	*	94	76	85	58	77		
	230	*	236	*	190	*	158	*	136	*	119	*	106	83	95	64	87	50	78
	360	*	241	*	193	*	162	*	139	*	121	*	108	*	97	75	88	59	81
	560	*	294	*	236	*	197	*	169	*	148	*	132	*	119	*	108	86	99

\* Indicates that **Total Load** value controls.

## How to Use This Table

1. Calculate actual total and live load in pounds per linear foot (plf).
2. Select appropriate **Joist Clear Span**.
3. Scan down the column to find a TJI® joist that meets or exceeds actual total and live loads.

## PSF to PLF Conversions

O.C. Spacing	Load in Pounds Per Square Foot (PSF)									
	20	25	30	35	40	45	50	55	60	
	Load in Pounds Per Linear Foot (PLF)									
12"	20	25	30	35	40	45	50	55	60	
16"	27	34	40	47	54	60	67	74	80	
19.2"	32	40	48	56	64	72	80	88	96	
24"	40	50	60	70	80	90	100	110	120	

## General Notes

- Table is based on:
  - Uniform loads.
  - No composite action provided by sheathing.
  - More restrictive of simple or continuous span.
- Total Load** limits joist deflection to L/240.
- Live Load** is based on joist deflection of L/480.
- If a live load deflection limit of L/360 is desired, multiply value in **Live Load** column by 1.33. The resulting live load shall not exceed the **Total Load** shown.
- Table does not account for safe loading. Use iLevel software when this condition applies.



**DO NOT** walk on joists until braced.  
INJURY MAY RESULT.



**DO NOT** stack building materials on unbraced joists. Stack only over beams or walls.



**DO NOT** walk on joists that are lying flat.

## WARNING

**Joists are unstable until braced laterally**

### Bracing Includes:

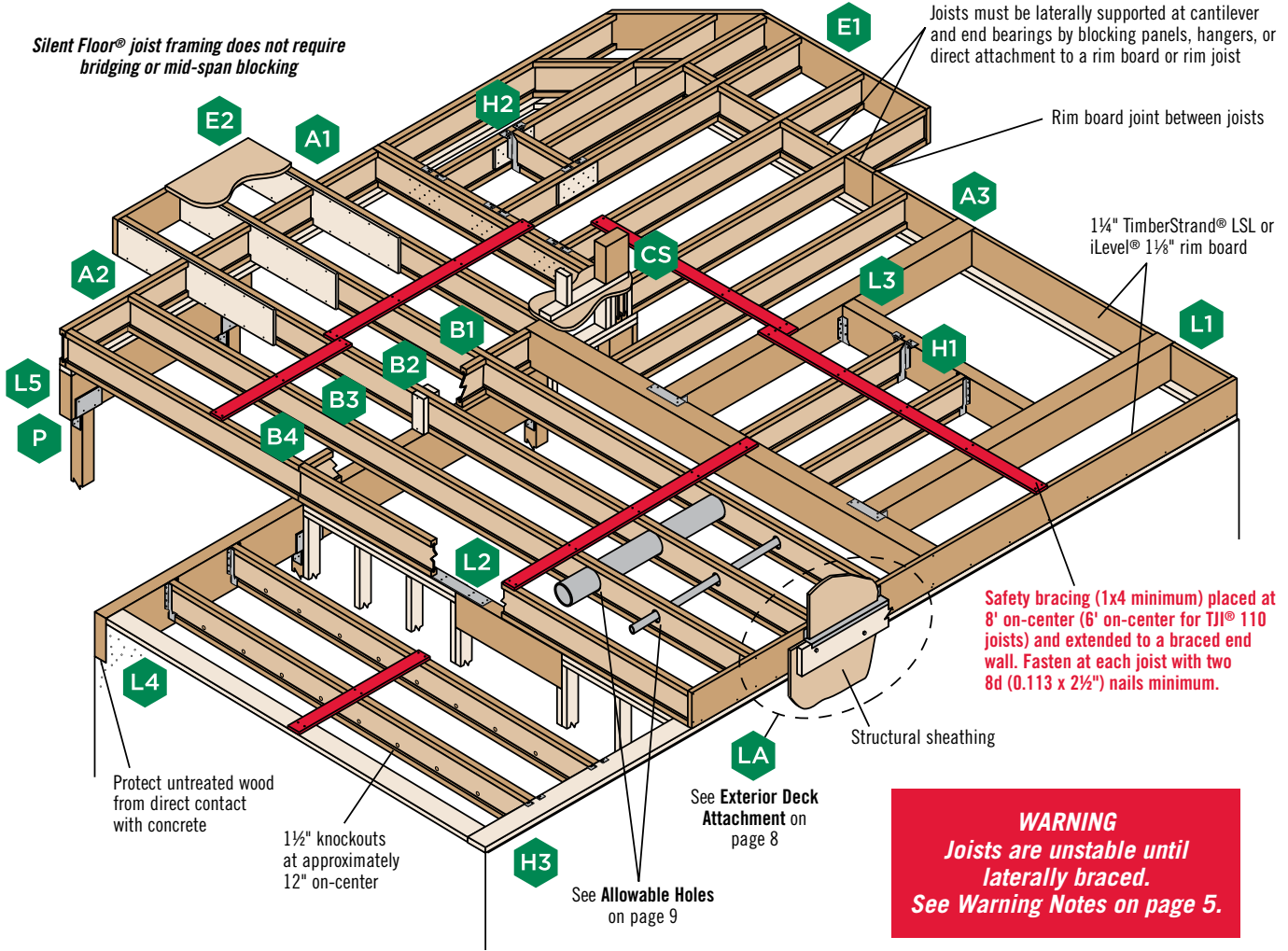
- Blocking
- Hangers
- Rim Board
- Sheathing
- Rim Joist
- Strut Lines

**WARNING NOTES:** Lack of proper bracing during construction can result in serious accidents. Observe the following guidelines:

1. All blocking, hangers, rim boards, and rim joists at the end supports of the TJI® joists must be completely installed and properly nailed.
2. Lateral strength, like a braced end wall or an existing deck, must be established at the ends of the bay. This can also be accomplished by a temporary or permanent deck (sheathing) fastened to the first 4 feet of joists at the end of the bay.
3. Safety bracing of 1x4 (minimum) must be nailed to a braced end wall or sheathed area (as in note 2) and to each joist. Without this bracing, buckling sideways or rollover is highly probable under light construction loads—such as a worker or one layer of unnailed sheathing.
4. Sheathing must be completely attached to each TJI® joist before additional loads can be placed on the system.
5. Ends of cantilevers require safety bracing on both the top and bottom flanges.
6. The flanges must remain straight within a tolerance of ½" from true alignment.

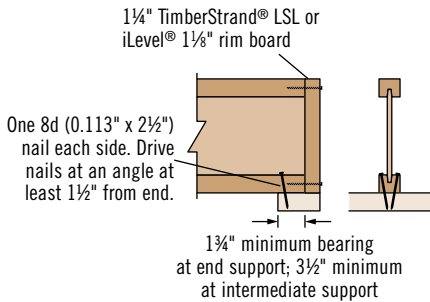
# SILENT FLOOR® JOIST FRAMING

*Silent Floor® joist framing does not require bridging or mid-span blocking*



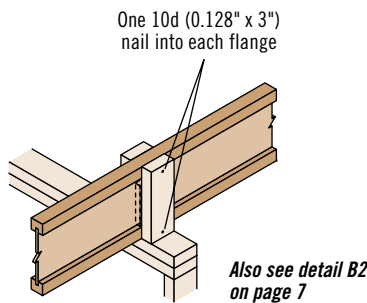
## TJI® Joist Nailing Requirements at Bearing

### TJI® Joist to Bearing Plate

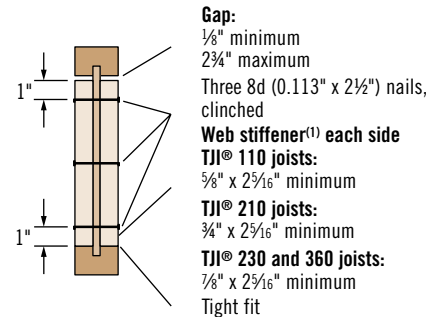


*Shear transfer nailing: Use connections equivalent to floor panel nailing schedule*

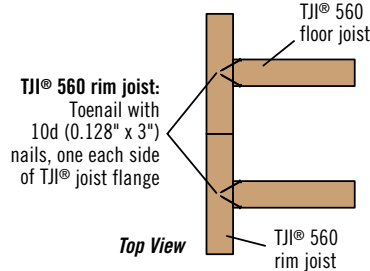
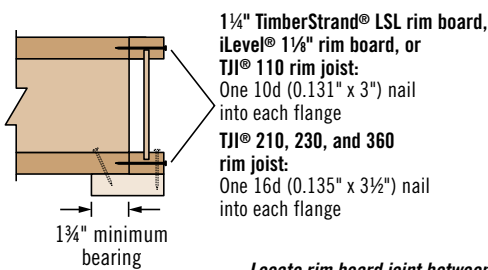
### Squash Blocks to TJI® Joist (Load bearing wall above)



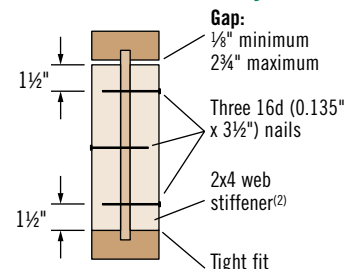
### Web Stiffener Attachment



### Rim to TJI® Joist



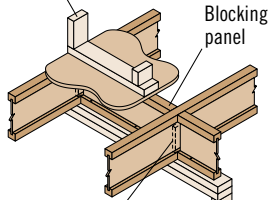
### TJI® 560 Joists Only



- W** (1) PS1 or PS2 sheathing, face grain vertical  
(2) Construction grade or better

# FLOOR DETAILS

**Load bearing or shear wall above**  
(must stack over wall below)

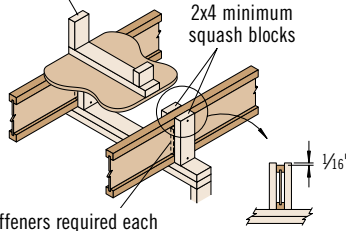


Web stiffeners required each side at B1W ONLY. See footnote 1 under span tables.

**B1** **B1W**

**IRC 502.7 requires lateral restraint (blocking) at all intermediate supports in Seismic Design Categories D<sub>0</sub>, D<sub>1</sub>, and D<sub>2</sub> to strengthen the floor diaphragm**

**Load bearing wall above**  
(must stack over wall below)

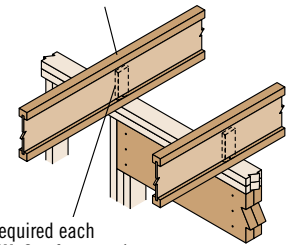


Web stiffeners required each side at B2W ONLY. See footnote 1 under span tables.

**B2** **B2W**

**Blocking panels may be required with shear walls above or below—see detail B1**

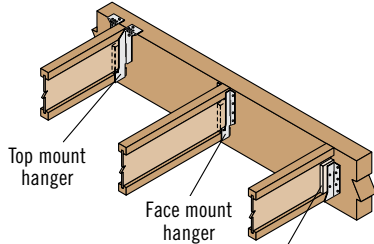
**No load bearing wall above**



Web stiffeners required each side at B3W ONLY. See footnote 1 under span tables.

**B3** **B3W**

**Blocking panels may be required with shear walls above or below—see detail B1**

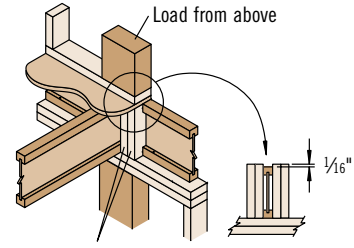
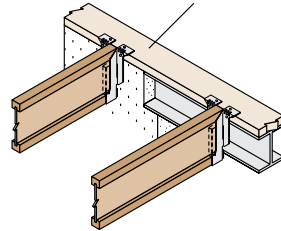


**H1**

Web stiffeners required if sides of hanger do not laterally support at least 3/8" of TJI joist top flange

**H3**

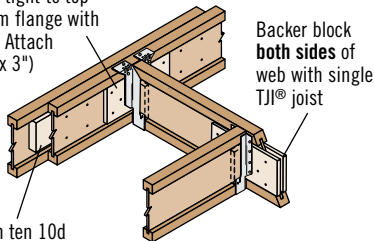
Flush bearing plate required. Maximum 1/4" overhang permitted at beam.



**CS**

**Use 2x4 minimum squash blocks to transfer load around TJI joist**

**Backer block:** Install tight to top flange (tight to bottom flange with face mount hangers). Attach with ten 10d (0.128" x 3") nails, clinched when possible. Use 15 nails in multi-family applications.



**Filler block:** Nail with ten 10d (0.128" x 3") nails, clinched. Use ten 16d (0.135" x 3 1/2") nails from each side with TJI 560 joists. Use 15 nails in multi-family applications.

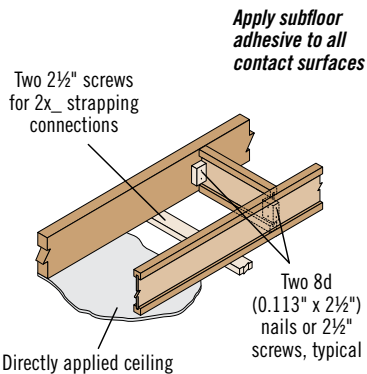
**H2**

**With top mount hangers, backer block required only for downward loads exceeding 250 lbs or for uplift conditions**

## Filler and Backer Block Sizes

TJI®	110		210		230 or 360		560	
Depth	9 1/2" or 11 7/8"	14"	9 1/2" or 11 7/8"	14" or 16"	9 1/2" or 11 7/8"	14" or 16"	11 7/8"	14" or 16"
<b>Filler Block<sup>(1)</sup> (Detail H2)</b>	2x6	2x8	2x6 + 3/8" sheathing	2x8 + 3/8" sheathing	2x6 + 1/2" sheathing	2x8 + 1/2" sheathing	Two 2x6	Two 2x8
<b>Cantilever Filler (Detail E4)</b>	2x6 4'-0" long	2x10 6'-0" long	2x6 + 3/8" sheathing 4'-0" long	2x10 + 3/8" sheathing 6'-0" long	2x6 + 1/2" sheathing 4'-0" long	2x10 + 1/2" sheathing 6'-0" long	Not applicable	
<b>Backer Block<sup>(1)</sup> (Detail F1 or H2)</b>	5/8" or 3/4"		3/4" or 7/8"		7/8" or 1" net		2x6	2x8

(1) If necessary, increase filler and backer block height for face mount hangers and maintain 1/8" gap at top of joist. See detail W. Filler and backer block dimensions should accommodate required nailing without splitting. The suggested minimum length is 24" for filler and 12" for backer blocks.



**PB1**

**When specified on the layout, one of the above bracing options is required**

## Fastener Spacing and Diaphragm Design Information

TJI®	Closest On-Center Spacing per Row <sup>(1)(2)</sup>			Diaphragm Design Information <sup>(3)</sup>	
	8d (0.113" x 2 1/2"), 8d (0.131" x 2 1/2"), 10d (0.128" x 3"), 12d (0.128" x 3 1/4")	10d (0.148" x 3"), 12d (0.148" x 3 1/4"), 16d (0.135" x 3 1/2")	16d (0.162" x 3 1/2")	Equivalent Nominal Framing Width	Maximum Capacity (plf)
<b>110 and 210</b>	4"	4" <sup>(4)</sup>	6"	2"	425
<b>230</b>	4"	4" <sup>(4)</sup>	6"	3"	480
<b>360 and 560</b>	3"	4" <sup>(4)</sup>	6"	3"	720

(1) Stagger nails when using 4" on-center spacing and maintain 3/8" joist and panel edge distance. One row of fasteners is permitted (two at abutting panel edges) for diaphragms. Fastener spacing for TJI joists in diaphragm applications cannot be less than shown in table. When fastener spacing for blocking is less than spacing shown above, rectangular blocking must be used in lieu of TJI joists.

(2) For non-diaphragm applications, multiple rows of fasteners are permitted if the rows are offset at least 1/2" and staggered.

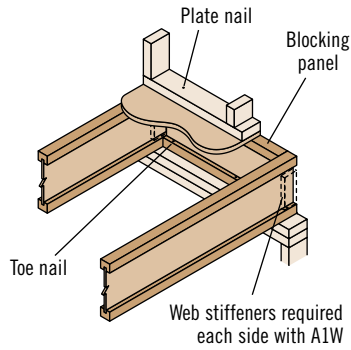
(3) To achieve code-tabulated, unblocked diaphragm design values for TJI 110, 210, and 230 joists, use fasteners in combination with an ASTM D3498 non-polyurethane sub-floor adhesive. For nailed-only conditions, use 85% of code-tabulated values.

(4) Can be reduced to 3" on-center for light gauge steel straps with 10d (0.148" x 1 1/2") nails.

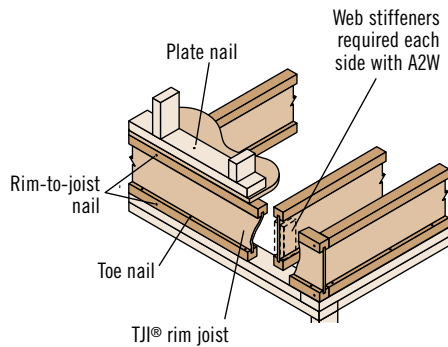
- Maximum spacing of nails is 18" on-center.
- 14 gauge staples may be substituted for 8d (0.113" x 2 1/2") nails if minimum penetration of 1" is achieved.
- Table also applies to the attachment of TJI rim joists and blocking panels to the wall plate.

Also see nailing requirements on page 6

# RIM BOARD SELECTION AND INSTALLATION

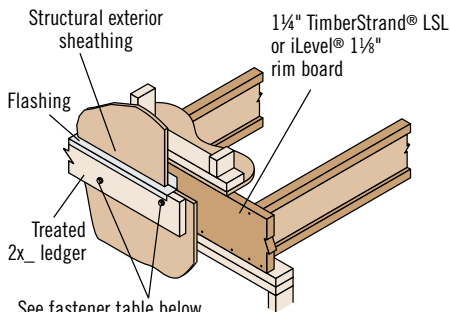


**A1** **A1W** Attach blocking per Rim Board Installation table below



**A2** **A2W** Must have 1 3/4" minimum joist bearing at ends. Attach rim joist per Rim Board Installation table below.

## Exterior Deck Attachment



See fastener table below. Maintain 2" distance (minimum) from edge of ledger to fastener.

Fastener	Allowable Load <sup>(1)</sup> (lbs)	
	1/4" TimberStrand® LSL Rim Board	iLevel® 1/8" Rim Board
3/8" lag bolt	400	N.A.
1/2" lag bolt	475	400

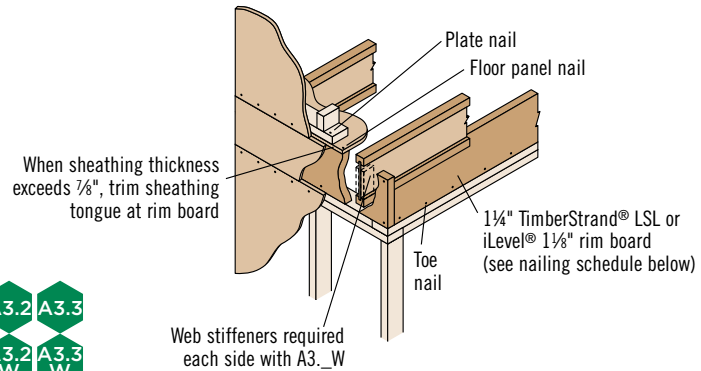
(1) Allowable load determined in accordance with AC 124.

- Corrosion-resistant fasteners required for wet-service applications.

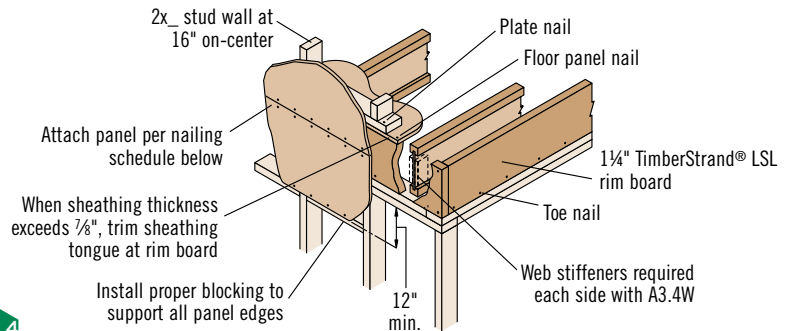


Rim board is often an important structural link in the ability of a home to resist lateral wind loads. It also transfers vertical load around the TJJ® joists.

Rim board detail A3 (shown below) satisfies conventional construction requirements. But if your project requires a designed solution, see iLevel's rim board specifier's guide (Reorder #TJ-8000) which features rim board selection and installation information for lateral wind loads.



**A3** **A3.1** **A3.2** **A3.3**  
**A3W** **A3.1W** **A3.2W** **A3.3W**



**A3.4** **A3.4W**

## Fastening of Floor Panels to 1/4" TimberStrand® LSL or iLevel® 1/8" Rim Board

Nail Size	Closest On-Center Spacing per Row	
	Rim Board Thickness	
	1 1/8"	1 1/4"
8d (0.113" or 0.131" x 2 1/2"), 10d (0.128" or 0.148" x 3"), 12d (0.128" or 0.148" x 3 1/4")	6"	4"
16d (0.162" x 3 1/2")	16"	6" <sup>(1)</sup>

(1) Can be reduced to 4" on-center if nail penetration into the narrow edge is no more than 1 3/8" (to avoid splitting).

- If more than one row of nails is used, the rows must be offset at least 1/2" and staggered.
- 14 gauge staples may be substituted for 8d (0.113" x 2 1/2") nails if minimum penetration of 1" is achieved.

## Rim Board Installation

Specifications	A3 Conventional Construction, Code Minimum	A3.1, A3.2, A3.3, A3.4 Designed Solution
Rim Board Thickness	1 1/8" or 1 1/4"	See iLevel's rim board specifier's guide (Reorder #TJ-8000)
Plate Nail—16d (0.135" x 3 1/2")	16" o.c.	
Floor Panel Nail—8d (0.131" x 2 1/2")	6" o.c.	
Toe Nail—10d (0.131" x 3")	6" o.c.	
Wall Sheathing	Per code	

## Vertical Load Transfer at Bearing

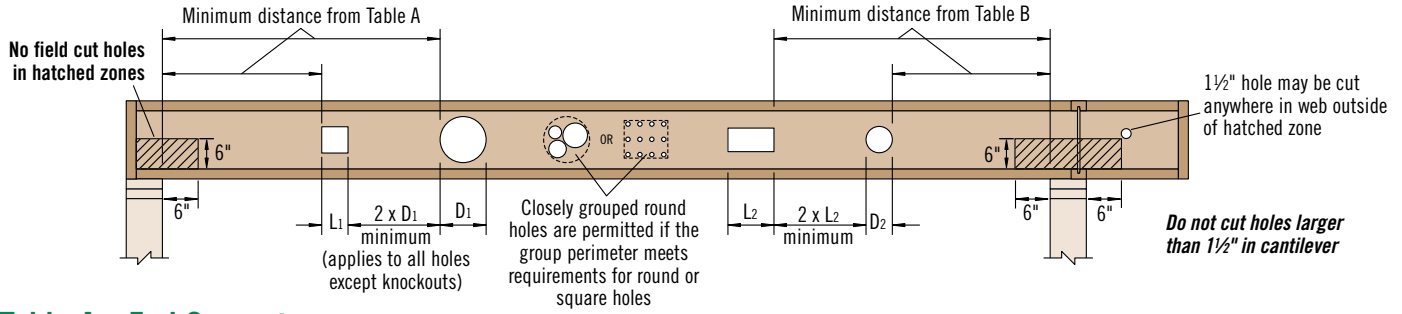
Allowable Uniform Vertical Loads (PLF)	
TJJ® rim joist or blocking	2,100
1/4" TimberStrand® LSL rim board or blocking	4,250
iLevel® 1/8" rim board or blocking	4,000

- Loads may not be increased for duration of load.

Also see nailing requirements on page 6



# ALLOWABLE HOLES



**Table A—End Support**  
Minimum distance from edge of hole to inside face of nearest end support

Depth	TJI®	● Round Hole Size									■ Square or Rectangular Hole Size								
		2"	3"	4"	5"	6½"	7"	8⅞"	11"	13"	2"	3"	4"	5"	6½"	7"	8⅞"	11"	13"
9½"	110	1'-6"	1'-6"	2'-0"	3'-0"	5'-0"					1'-0"	1'-6"	2'-6"	3'-6"	4'-6"				
	210	1'-6"	2'-0"	2'-6"	3'-0"	5'-6"					1'-6"	2'-0"	2'-6"	4'-0"	5'-0"				
	230	1'-6"	2'-0"	2'-6"	3'-6"	5'-6"					1'-6"	2'-0"	3'-0"	4'-6"	5'-0"				
11⅞"	110	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	5'-6"			1'-0"	1'-6"	2'-0"	2'-6"	4'-6"	5'-0"	6'-0"		
	210	1'-0"	1'-6"	2'-0"	2'-0"	3'-0"	3'-6"	6'-0"			1'-0"	1'-6"	2'-6"	3'-0"	5'-0"	5'-6"	6'-6"		
	230	1'-0"	1'-6"	2'-0"	2'-6"	3'-0"	3'-6"	6'-6"			1'-0"	2'-0"	2'-6"	3'-6"	5'-6"	5'-6"	7'-0"		
	360	1'-6"	2'-0"	3'-0"	3'-6"	4'-6"	5'-0"	7'-0"			1'-6"	2'-6"	3'-6"	4'-6"	6'-6"	6'-6"	7'-6"		
14"	110	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	3'-0"	5'-6"		1'-0"	1'-0"	1'-6"	2'-0"	3'-6"	4'-0"	6'-0"	8'-0"	
	210	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	2'-6"	3'-6"	6'-0"		1'-0"	1'-0"	2'-0"	2'-6"	4'-0"	4'-6"	6'-6"	8'-6"	
	230	1'-0"	1'-0"	1'-0"	1'-6"	2'-6"	2'-6"	4'-0"	7'-0"		1'-0"	1'-0"	2'-0"	3'-0"	4'-0"	5'-0"	7'-0"	9'-0"	
	360	1'-0"	1'-0"	1'-6"	2'-6"	3'-6"	4'-0"	5'-6"	8'-0"		1'-0"	1'-6"	2'-6"	4'-0"	6'-0"	6'-6"	8'-0"	9'-6"	
16"	110	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-6"	3'-6"	6'-0"	1'-0"	1'-0"	1'-0"	2'-0"	3'-0"	3'-6"	6'-6"	8'-0"	11'-0"
	230	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-6"	3'-0"	4'-0"	7'-0"	1'-0"	1'-0"	1'-0"	2'-0"	3'-6"	4'-0"	7'-0"	9'-0"	11'-0"
	360	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	2'-6"	4'-6"	6'-6"	9'-0"	1'-0"	1'-0"	1'-6"	3'-0"	5'-0"	5'-6"	9'-0"	10'-0"	11'-6"
	560	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	3'-0"	5'-0"	7'-6"	10'-0"	1'-0"	2'-0"	3'-0"	4'-6"	6'-6"	7'-0"	10'-0"	11'-0"	12'-0"

**Table B—Intermediate or Cantilever Support**  
Minimum distance from edge of hole to inside face of nearest intermediate or cantilever support

Depth	TJI®	● Round Hole Size									■ Square or Rectangular Hole Size								
		2"	3"	4"	5"	6½"	7"	8⅞"	11"	13"	2"	3"	4"	5"	6½"	7"	8⅞"	11"	13"
9½"	110	2'-0"	2'-6"	3'-6"	4'-6"	7'-6"					1'-6"	2'-6"	3'-6"	5'-6"	6'-6"				
	210	2'-0"	2'-6"	3'-6"	5'-0"	8'-0"					2'-0"	3'-0"	4'-0"	6'-6"	7'-6"				
	230	2'-6"	3'-0"	4'-0"	5'-6"	8'-6"					2'-0"	3'-6"	4'-6"	6'-6"	7'-6"				
11⅞"	110	1'-0"	1'-0"	1'-6"	2'-0"	4'-0"	4'-6"	8'-6"			1'-0"	1'-6"	2'-6"	4'-0"	7'-0"	9'-6"			
	210	1'-0"	1'-0"	2'-0"	3'-0"	4'-6"	5'-0"	9'-0"			1'-0"	2'-0"	3'-0"	4'-6"	8'-0"	8'-0"	10'-0"		
	230	1'-0"	2'-0"	2'-6"	3'-6"	5'-0"	5'-6"	10'-0"			1'-0"	2'-6"	3'-6"	5'-0"	8'-6"	9'-0"	10'-6"		
	360	2'-0"	3'-0"	4'-0"	5'-6"	7'-0"	7'-6"	11'-0"			2'-0"	3'-6"	5'-0"	7'-0"	9'-6"	9'-6"	11'-0"		
14"	110	1'-6"	3'-0"	4'-6"	5'-6"	8'-0"	8'-6"	12'-0"			3'-0"	4'-6"	6'-0"	8'-0"	10'-6"	11'-0"	12'-0"		
	210	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	2'-6"	4'-6"	8'-6"		1'-0"	1'-0"	1'-0"	2'-6"	5'-0"	6'-0"	9'-0"	12'-0"	
	230	1'-0"	1'-0"	1'-0"	2'-0"	3'-6"	4'-0"	6'-0"	10'-6"		1'-0"	1'-0"	2'-6"	4'-0"	6'-6"	7'-6"	11'-0"	13'-6"	
	360	1'-0"	1'-0"	2'-0"	3'-6"	5'-6"	6'-0"	8'-6"	12'-6"		1'-0"	2'-0"	4'-0"	5'-6"	9'-0"	10'-0"	12'-0"	14'-0"	
16"	110	1'-0"	1'-0"	1'-6"	3'-6"	5'-6"	6'-6"	9'-6"	13'-6"		1'-0"	3'-0"	5'-0"	7'-0"	10'-0"	11'-0"	13'-6"	15'-0"	
	210	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	3'-6"	6'-0"	10'-0"	1'-0"	1'-0"	1'-0"	1'-6"	4'-6"	5'-6"	10'-0"	12'-6"	16'-0"
	230	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	2'-0"	4'-0"	6'-6"	11'-0"	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"	6'-0"	10'-6"	13'-6"	16'-6"
	360	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	4'-0"	6'-6"	10'-0"	13'-6"	1'-0"	1'-0"	2'-0"	4'-0"	7'-6"	8'-6"	13'-0"	14'-6"	17'-0"
16"	560	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	3'-6"	7'-0"	11'-0"	15'-0"	1'-0"	1'-0"	3'-6"	5'-6"	9'-0"	10'-0"	14'-6"	16'-0"	18'-0"

• Rectangular holes based on measurement of longest side.

## How to Use These Tables

- Using **Table A**, **Table B**, or both if required, determine the hole shape/size and select the TJI® joist and depth.
- Scan horizontally until you intersect the correct hole size column.
- Measurement shown is minimum distance from edge of hole to support.
- Maintain the required minimum distance from the end **and** the intermediate or cantilever support.

**WARNING:** Drilling, sawing, sanding or machining wood products generates wood dust, a substance known to the State of California to cause cancer. For more information on Proposition 65, visit [www.wy.com/inform](http://www.wy.com/inform).

## General Notes

- Holes may be located vertically anywhere within the web. Leave ⅛" of web (minimum) at top and bottom of hole.
- Knockouts are located in web at approximately 12" on-center; they do not affect hole placement.
- For simple span (5' minimum) uniformly loaded joists meeting the requirements of this guide, one maximum size round hole may be located at the center of the joist span **provided that no other holes occur in the joist**.
- Distances are based on the maximum uniform loads shown in this guide. For other load conditions or hole configurations, use Forte® software or contact your iLevel representative.

**DO NOT**  
cut or notch flange.



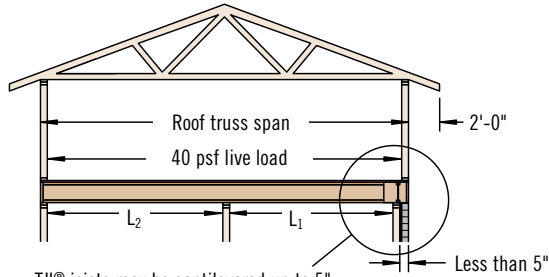
**DO NOT**  
cut holes in cantilever reinforcement.



# CANTILEVERS

## Cantilevers Less Than 5" (Brick Ledge)

See Section A of cantilever table on page 11

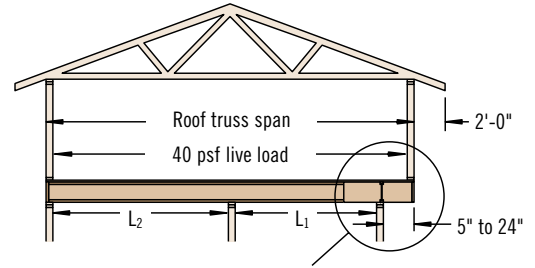


TJI® joists may be cantilevered up to 5" when supporting roof load, assuming:

- simple or continuous span
- $L_1 \leq L_2$
- minimum backspan = 2x cantilever length

## Cantilevers 5" to 24"

See Section B of cantilever table on page 11

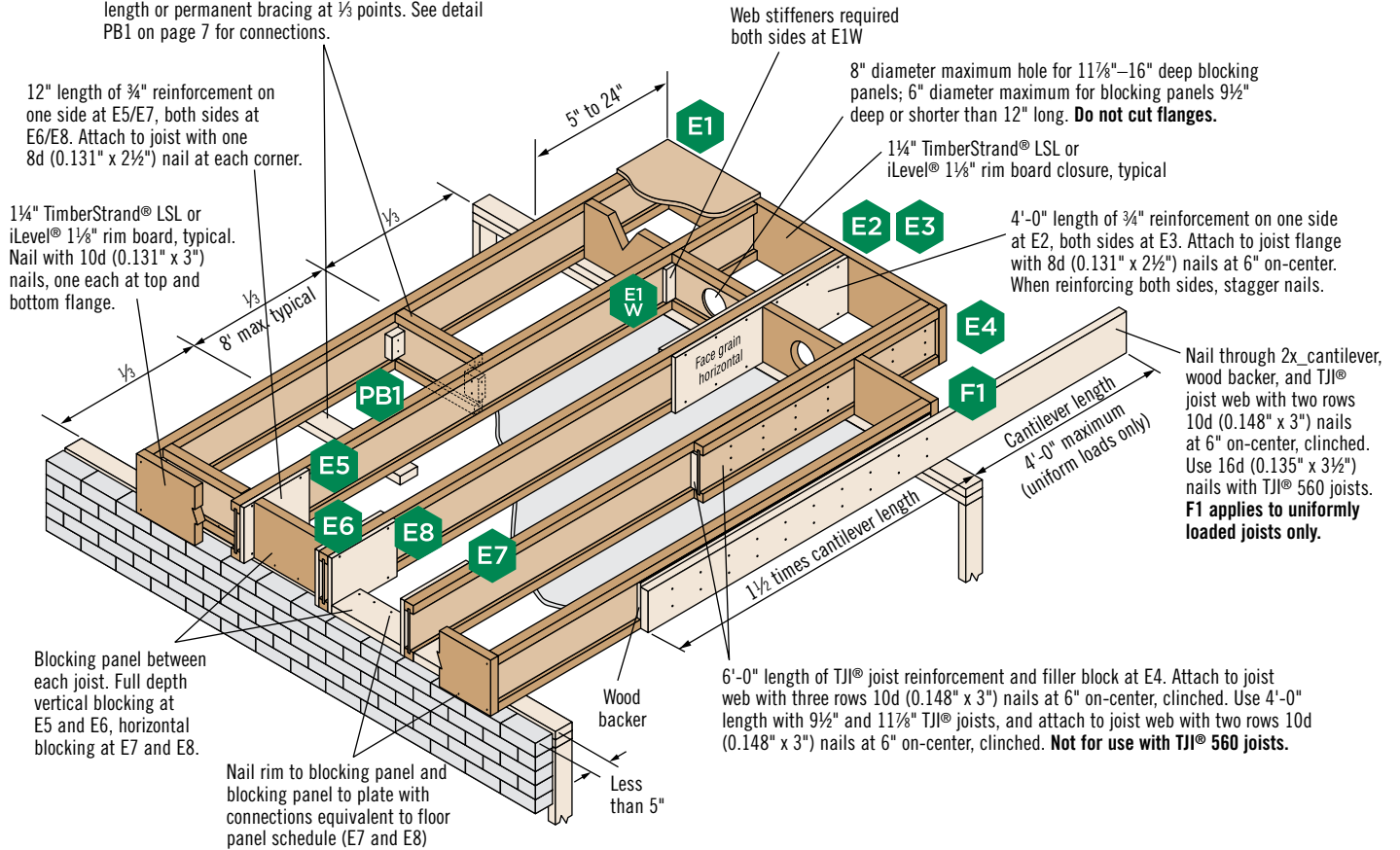


TJI® joists may be cantilevered 5" to 24" when supporting roof load, assuming:

- simple or continuous span
- $L_1 \leq L_2$
- minimum backspan = 2x cantilever length

**TJI® joists are intended for dry-use applications**

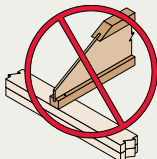
At PB1, cantilever back span must be permanently braced with either direct-applied ceiling along entire length or permanent bracing at  $\frac{1}{3}$  points. See detail PB1 on page 7 for connections.



### These Conditions Are **NOT** Permitted:



**DO NOT** use sawn lumber for rim board or blocking as it may shrink after installation. Use only engineered lumber



**DO NOT** bevel cut joist beyond inside face of wall.



**DO NOT** install hanger overhanging face of plate or beam. Flush bearing plate with inside face of wall or beam.

# CANTILEVERS

## Cantilever Reinforcement

Depth	TJI®	Roof Truss Span	Section A: Cantilevers less than 5" (Brick Ledge)									Section B: Cantilevers 5" to 24"								
			Roof Total Load									Roof Total Load								
			35 PSF			45 PSF			55 PSF			35 PSF			45 PSF			55 PSF		
			On-Center Joist Spacing									On-Center Joist Spacing								
16"	19.2"	24"	16"	19.2"	24"	16"	19.2"	24"	16"	19.2"	24"	16"	19.2"	24"	16"	19.2"	24"			
9½" 11⅝" 14"	110	20'					E5			E5					E2			X		
		22'			E5			E5		E5	E5				E3		E2	X		
		24'			E5		E5	E5		E5	E5			E2		E2	X	E2	E3	X
		26'			E5		E5	E5	E5	E5	E5			E2		E3	X	E3	X	X
		28'			E5		E5	E5	E5	E5	E6			E2	E3	X	X	X	X	X
		30'		E5	X	E5	E5	X	E5	E5	X			E2	X	E3	X	X	X	X
		32'		X	X	E5	X	X	E5	X	X	E2	E3	X	X	X	X	X		
9½" 11⅝" 14" 16"	210	20'					E5			E5								E2		
		22'					E5			E5						E2		E2	E3	
		24'			E5			E5		E5	E5					E3		E2	X	
		26'			E5			E5		E5	E5			E2		E3	E2	E3	X	
		28'			E5		E5	E5		E5	E5			E2		E3	X	E3	X	
		30'			E5		E5	E5	E5	E5	E6			E3	E2	E3	X	X	X	
		32'		E5	X	E5	X	E5	E5	X			E2	X	E3	X	X	X		
9½" 11⅝" 14" 16"	230	24'			E5			E5		E5	E5					E2		E2	X	
		26'			E5			E5		E5	E5					E3	E2	E3	X	
		28'			E5		E5	E5		E5	E5			E2		E3	X	E2	X	
		30'			E5		E5	E5	E5	E5	E5			E2	E2	E3	X	E3	X	
		32'		E5	E5		E5	E5	E5	E5	E6			E2	E3	E2	X	X	X	
		34'		E5	X	E5	E5	X	E5	E5	X			E2	X	E3	X	X	X	
11⅝" 14" 16"	360	28'			E5			E5		E5	E5									
		30'			E5			E5		E5	E5							E2		
		32'			E5		E5	E5		E5	E5							E2		
		34'			E5		E5	E5	E5	E5	E6							E3		
		36'			E5		E5	E5	E5	E5	E6					E2		E2	X	
		38'		E5	E5		E5	E5	E5	E5	E6					E3		E3	X	
		40'		E5	E5	E5	E5	E5	E5	E6				E2	E3	E2	E3	X		
11⅝" 14" 16"	560	30'					E5			E5										
		32'					E5			E5	E5									
		34'			E5			E5		E5	E5									
		36'			E5			E5		E5	E6							E2		
		38'			E5		E5	E5		E5	E6							E2		
		40'			E5		E5	E5	E5	E5	E6							E2		

### How to Use This Table

1. Identify TJI® joist and depth.
2. Locate the **Roof Truss Span** (horizontal) that meets or exceeds your condition.
3. Identify the cantilever condition (less than 5" or 5" to 24") and locate the **Roof Total Load** and **On-Center Joist Spacing** for your application.
4. Scan down to find the appropriate cantilever detail and refer to drawing on page 10:
  - Blank cells indicate that no reinforcement is required.
  - E4 may be used in place of E2 or E3 except when using TJI® 560 joists.
  - X indicates that cantilever will not work. Use iLevel® Forte® and Javelin® software, or reduce spacing of joists and recheck table.

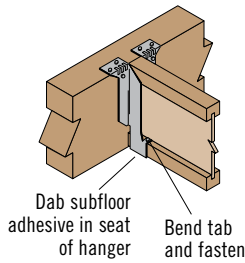
### General Notes

- Table is based on:
  - 15 psf roof dead load on a horizontal projection.
  - 80 plf exterior wall load with 3'-0" maximum width window or door openings. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" on-center, additional joists beneath the opening's trimmers may be required.
  - Floor load of 40 psf live load and 10 psf dead load.
  - More restrictive of simple or continuous span.
  - Roof truss with 24" soffits.
- ¾" reinforcement refers to ¾" Exposure 1 plywood or other ¾" Exposure 1, 48/24-rated sheathing that is cut to match the full depth of the TJI® joist. Install with face grain horizontal. Reinforcing member must bear fully on the wall plate.
- Designed for 2x4 and 2x6 plate widths.
- For conditions beyond the scope of this table, including cantilevers longer than 24", use our iLevel® Forte® and Javelin® software.

# TIPS FOR PREVENTING FLOOR NOISE

Silent Floor® joists are structurally uniform and dimensionally stable, and they resist shrinking and twisting. This helps prevent gaps from forming around the nails between the joist and the floor panels—gaps that can potentially cause squeaks or other floor noise. Using Silent Floor® joists can help you build a quieter floor, but only if the entire floor system is installed properly. This is because other components of the floor system, such as hangers, connectors, and nails can be a source of floor noise.

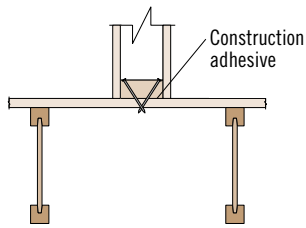
## Properly Seat Each Joist in Hanger



**Seat the joist tight to the bottom of the hanger. When using hangers with tabs, bend the flange tabs over and nail to the TJI® joist bottom flange.**

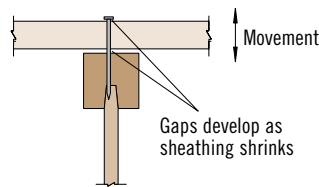
Placing a dab of subfloor adhesive in the seat of the hanger prior to installing the joist can reduce squeaks.

## Use Adhesive and Special Nailing When Needed



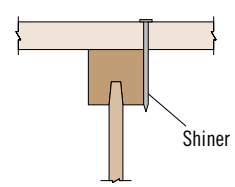
**Nail interior partitions to the joists when possible. If the wall can be nailed only to the floor panel, run a bead of adhesive under the wall and either cross nail, nail through and clinch tight, or screw tightly into the wall from below.**

## Prevent Shrinkage



**Keep building materials dry, and properly glue floor panels to the joists. Panels that become excessively wet during construction shrink as they dry. This shrinkage may leave gaps that allow the panel to move when stepped on.**

## Avoid “Shiners”



**Exercise care when nailing. Nails that barely hit the joists (shiners) do not hold the panel tight to the joist and should be removed. If left in, the nails will rub against the side of the joist when the panel deflects.**

For more information and tips on how to prevent floor noise, refer to the *iLevel Prevention and Repair of Floor System Squeaks Technical Resource Sheet (Reorder #9009)* or contact your iLevel representative.

# FIRE-SAFE CONSTRUCTION

Over the past 40 years, prefabricated wood I-joists and other iLevel building products have established a record of safe and reliable performance in millions of structures. Many of these structures, such as one- or two-family residential dwellings, do not require specific fire-resistance ratings per the building codes. The following information is intended to help you specify and install iLevel® brand products with fire safety in mind.

## Active Fire Suppression

Automatic fire sprinkler systems are commonly required by building codes in schools, office buildings, factories, and other commercial buildings. Buildings designed with sprinkler systems are allowed larger areas and a greater height than buildings designed without sprinkler systems.

Fire service agencies, such as the U.S. Fire Administration, promote the use of residential sprinkler systems. These agencies cite benefits such as lower overall cost of construction for the homeowner, plus a safer environment and lower insurance rates for the homeowner. Using automatic fire sprinkler systems provides the following benefits:

- Early and unsupervised suppression
- Reduced fire and smoke development
- Potentially enhanced life safety for the occupant(s)

## Smoke Detectors

Smoke detectors are universally recognized as the most cost-effective life-saving devices. Although smoke detectors do not provide protection to the structure or to the contents in a home, they do alert occupants to potential fire hazards and allow them time to escape.

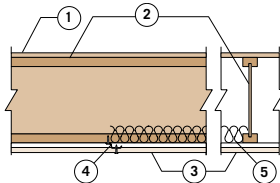
## Passive Fire Protection

Independent tests show that when compared to protected systems, unprotected framing systems (whether combustible or non-combustible) suffer increased structural degradation when exposed to fire. All floor framing materials—sawn lumber, wood I-joists, trusses, and light-gauge steel—succumb quickly to fire if not protected. Applying a protective membrane such as gypsum ceiling board to all types of floor framing within the structure will provide uniform

protection to the structural framing members. Passive fire-protection can do the following:

- Delay fire growth involving structural elements
- Reduce the potential for significant property damage to structural elements
- Enhance the market value of the building

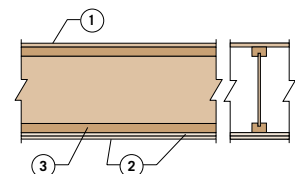
## Suggested Minimum Membrane Protection for Unrated Construction



**iLevel supports the idea that all floor/ceiling and roof/ceiling assemblies in habitable areas be protected by a minimum membrane protection consisting of 1/2" gypsum board (or equivalent)**

1. 48/24 tongue-and-groove span-rated sheathing (Exposure 1)
2. TJI® joist
3. Single-layer of 1/2" thick, unrated gypsum board
4. Resilient channels at 16" on-center (optional)
5. **Optional when used with resilient channels:** Minimum 3 1/2"-thick glass fiber insulation or non-combustible insulation that is rated R-30 or less.

## One-Hour Assembly for Rated Construction



1. 48/24 tongue-and-groove, span-rated sheathing (Exposure 1)
2. Two layers of 1/2" thick Type C gypsum board
3. TJI® joist

**Optional when used with resilient channels (not shown):** Minimum 3 1/2"-thick glass fiber insulation or non-combustible insulation that is rated R-30 or less.

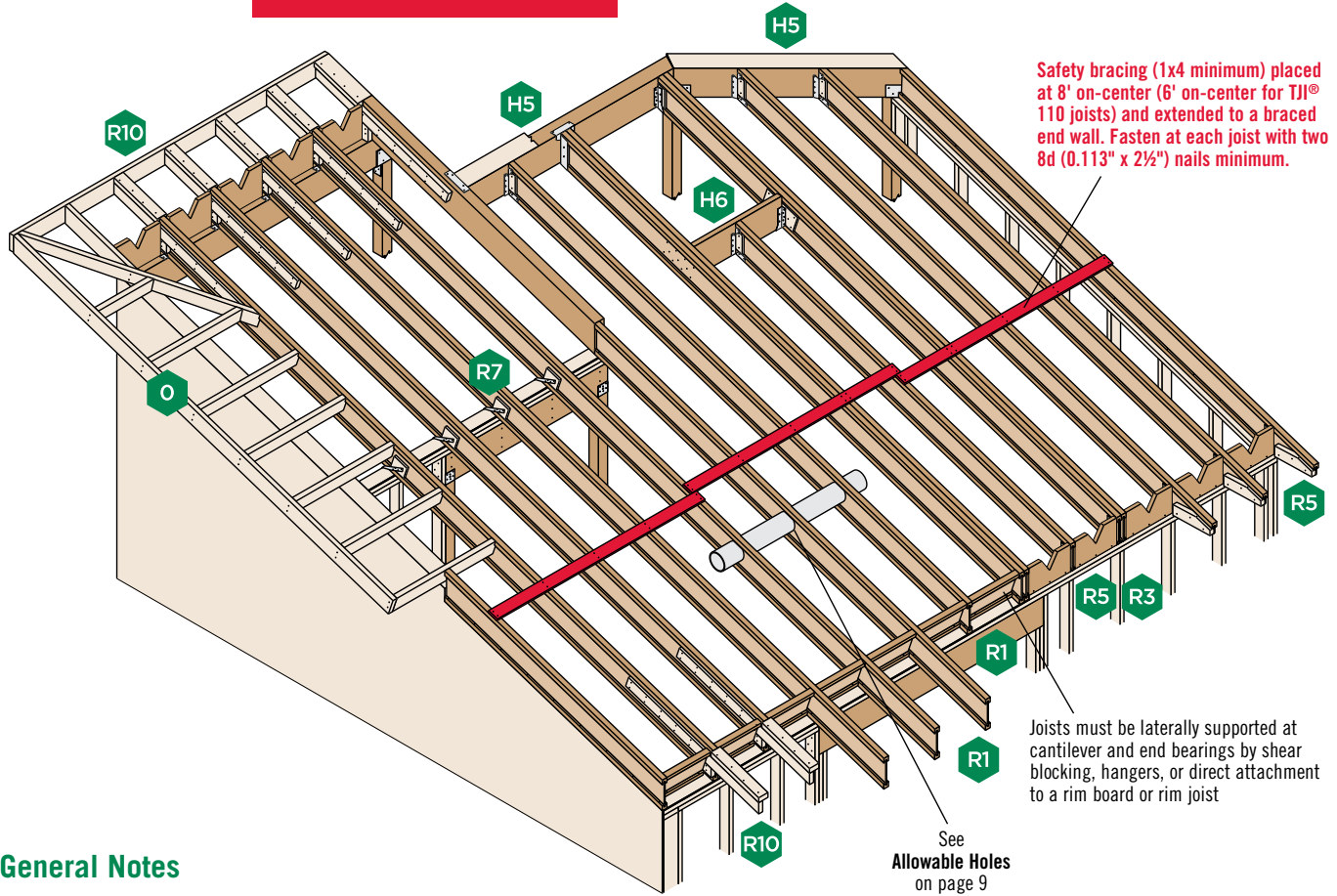
**Note:** Resilient channels may be installed between the joists and gypsum board if improved STC and IIC sound ratings are desired.

Reference Assembly B per ICC ES ESR-1153

For more information on fire assemblies and fire-safe construction, please refer to the *iLevel Fire Facts Guide (Reorder #1500)* or visit [www.iLevel.com](http://www.iLevel.com) and [www.i-joist.com](http://www.i-joist.com)

# ROOF FRAMING

**WARNING**  
Joists are unstable until laterally braced.  
See Warning Notes on page 5.



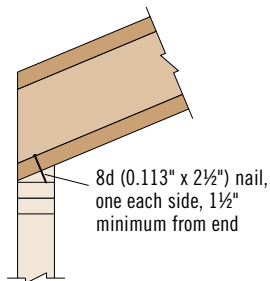
## General Notes

- Unless otherwise noted, all details are valid to a maximum slope of 12:12.
- Web stiffeners are required if the sides of the hanger do not laterally support at least ⅜" of the TJI® joist top flange.

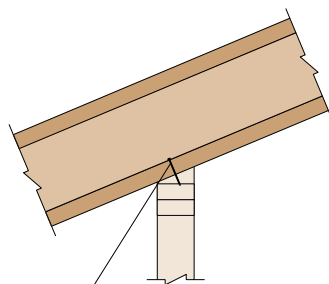
## TJI® Joist Nailing Requirements at Bearing

### TJI® Joist to Bearing Plate

**End Bearing**  
(1¼" minimum bearing required)



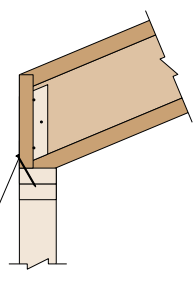
**Intermediate Bearing**  
(3½" minimum bearing required)



**Slopes 3:12 or less:**  
One 8d (0.113" x 2½") nail each side. See detail R7.

**Slopes greater than 3:12:**  
Two 8d (0.113" x 2½") nails each side, plus a twist strap and backer block. See detail R7S.

### Blocking to Bearing Plate



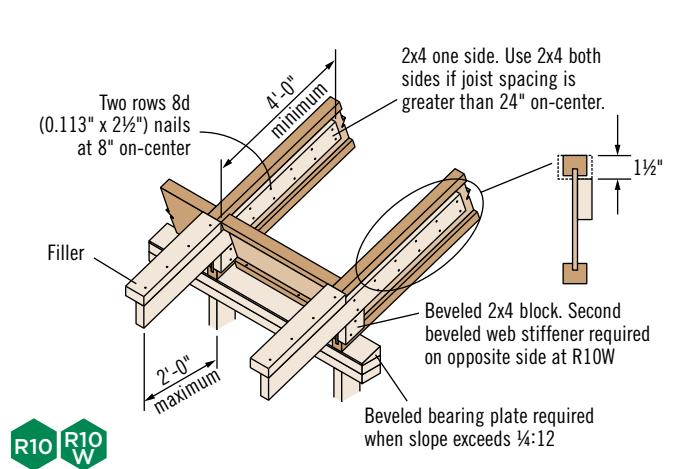
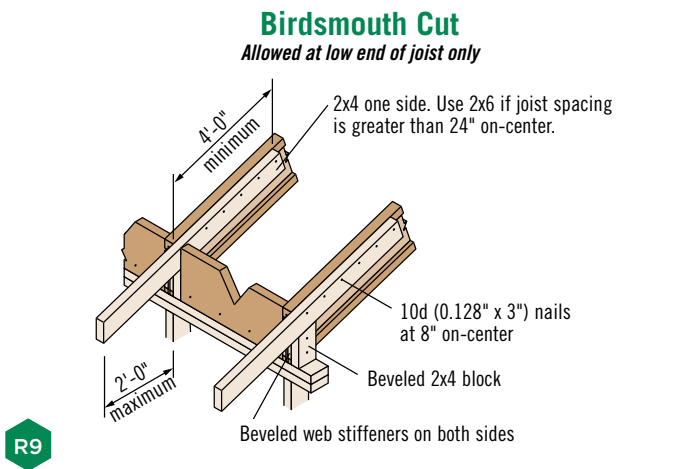
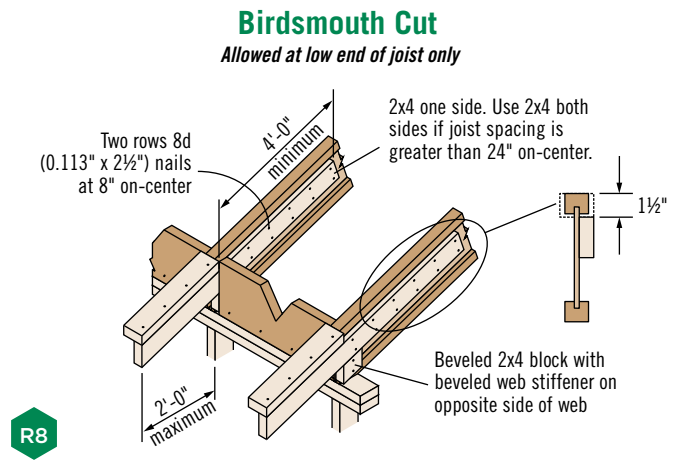
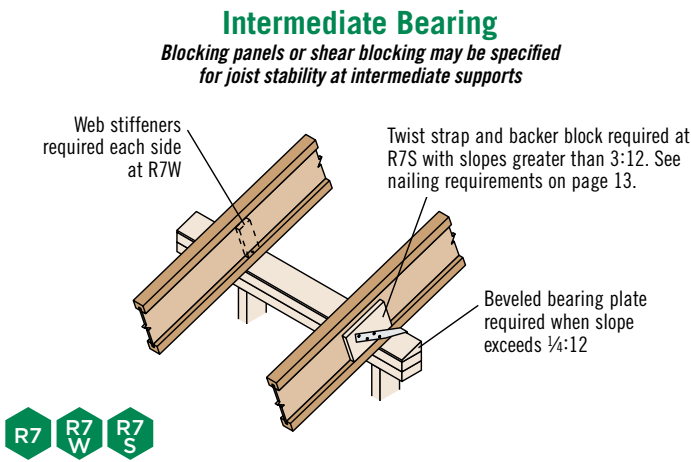
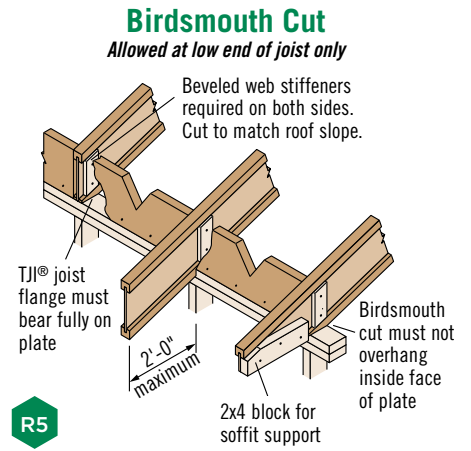
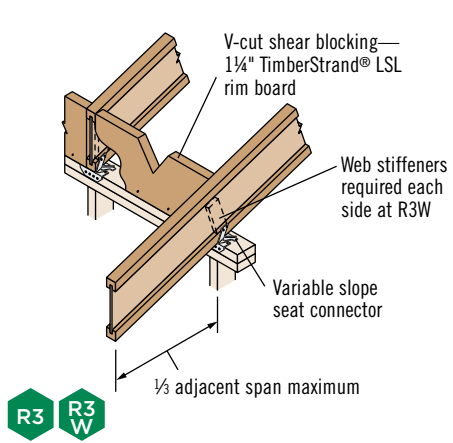
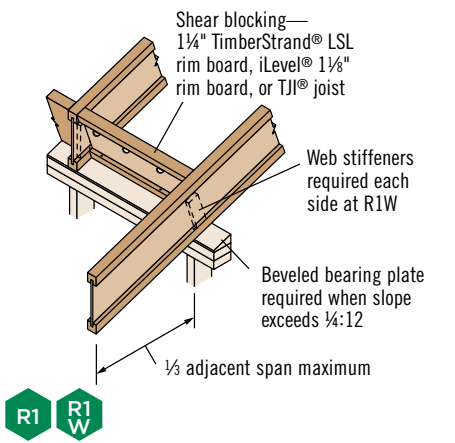
**1¼" TimberStrand® LSL or iLevel® 1½" rim board:**  
Toenail with 10d (0.131" x 3") nails at 6" on-center or 16d (0.135" x 3½") nails at 12" on-center

**TJI® joist blocking:**  
10d (0.128" x 3") nails at 6" on-center

**Shear transfer nailing:**  
Use connections equivalent to sheathing nail schedule

*When slope exceeds ¼:12, a beveled bearing plate, variable slope seat connector, or birdsmouth cut (at low end of joist only) is required*

# ROOF DETAILS



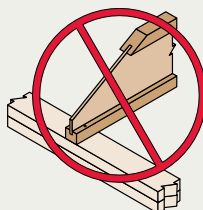
## These Conditions Are **NOT** Permitted

**DO NOT** cut holes  
too close to support.

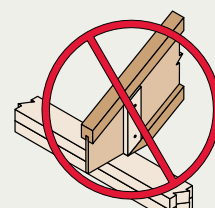


Refer to Allowable Holes on page 9  
for minimum distance from support.

**DO NOT** bevel cut joist  
beyond inside face of wall.



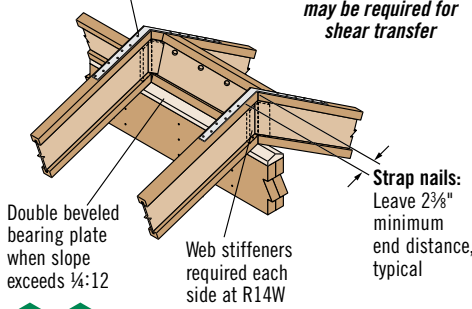
**DO NOT** overhang birdsmouth cut  
from inside face of plate.



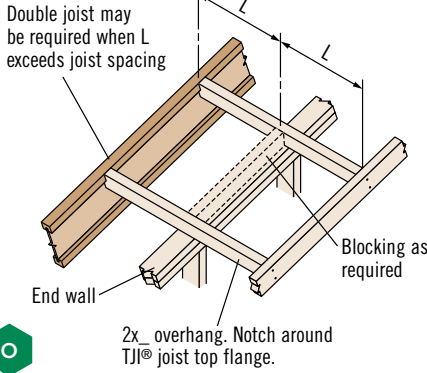
TJI® joist flange must bear fully on the plate.  
See detail BC on page 15.

# ROOF DETAILS

LSTA18 (Simpson or USP) strap with twelve 10d (0.148" x 1½") nails



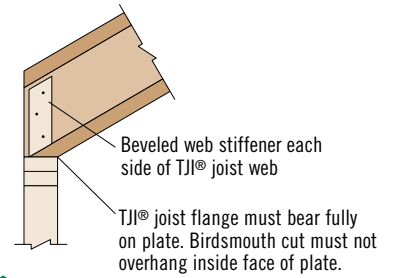
R14 R14W



O

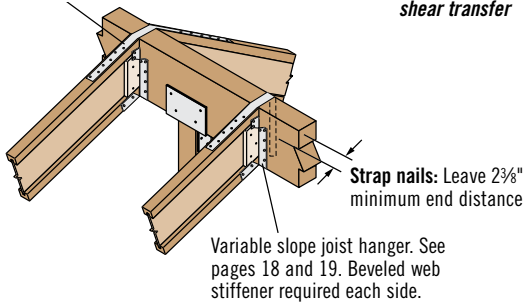
## Birdsmouth Cut

Allowed at low end of joist only



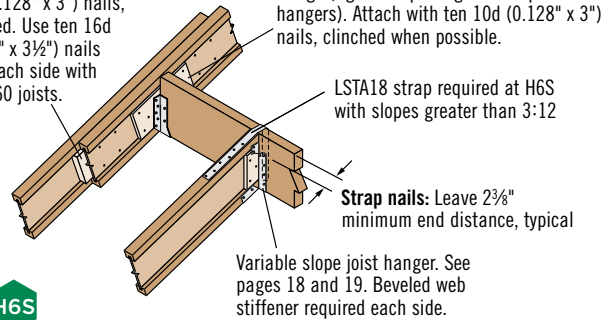
BC

LSTA24 (Simpson Strong-Tie or USP Structural Connectors) strap with twelve 10d (0.148" x 1½") nails required at H5S with slopes greater than 3:12



H5 H5S

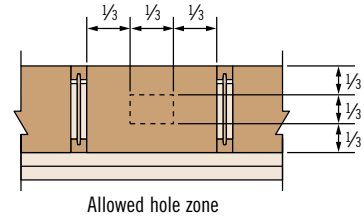
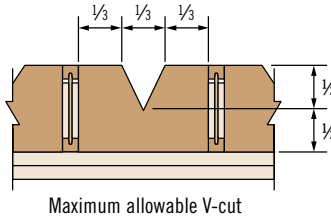
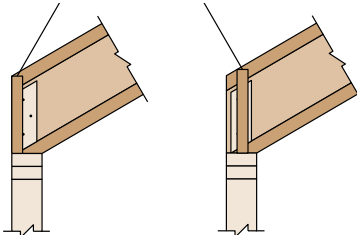
Filler block: Attach with ten 10d (0.128" x 3") nails, clinched. Use ten 16d (0.135" x 3½") nails from each side with TJI® 560 joists.



H6 H6S

## Shear Blocking and Ventilation Holes (Roof Only)

Field trim to match joist depth at outer edge of wall or locate on wall to match joist depth



SB For TJI® joists with slopes of 10:12 to 12:12, the vertical depth of the shear blocking at bearing will require 1¼" TimberStrand® LSL or iLevel® 1⅝" rim board that is one size deeper than the TJI® joist. DO NOT use iLevel® 1⅝" rim board in ventilation-hole applications.

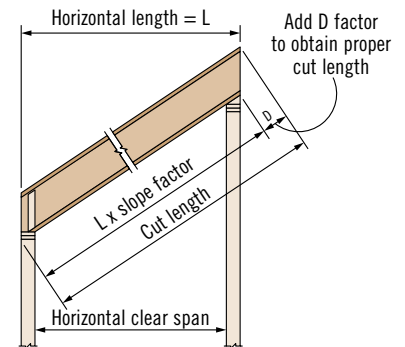
## Filler and Backer Block Sizes

TJI®	110		210		230 or 360		560	
	9½" or 11⅞"	14"	9½" or 11⅞"	14" or 16"	9½" or 11⅞"	14" or 16"	11⅞"	14" or 16"
Filler Block (Detail H6)	2x6	2x8	2x6 + ⅜" sheathing	2x8 + ⅜" sheathing	2x6 + ½" sheathing	2x8 + ½" sheathing	Two 2x6	Two 2x8
Backer Block (Detail H6)	⅝" or ¾"		¾" or ⅞"		⅞" or 1" net		2x6	2x8

▪ If necessary, increase filler and backer block height for face mount hangers and maintain ⅛" gap at top of joist; see detail W on page 6. Filler and backer block dimensions should accommodate required nailing without splitting. The suggested minimum length is 24" for filler and 12" for backer blocks.

## D Factors (Cut Length Calculations)

Depth	Slope												
	2½:12	3:12	3½:12	4:12	4½:12	5:12	6:12	7:12	8:12	9:12	10:12	11:12	12:12
9½"	2"	2⅜"	2⅞"	3¼"	3⅝"	4"	4¾"	5⅝"	6⅜"	7⅞"	8"	8¾"	9½"
11⅞"	2½"	3"	3½"	4"	4½"	5"	6"	7"	8"	9"	10"	11"	11⅞"
14"	3"	3½"	4⅞"	4¾"	5¼"	5⅞"	7"	8¼"	9⅞"	10½"	11¾"	12⅞"	14"
16"	3⅜"	4"	4¾"	5⅜"	6"	6¾"	8"	9⅜"	10¾"	12"	13⅜"	14¾"	16"



Actual cut length can be approximated by multiplying the horizontal length by the slope factor (see table on page 17) and adding the D factor.

See General Notes and nailing requirements on page 13

# ROOF SPAN TABLE

## Maximum Horizontal Clear Spans—Roof

O.C. Spacing	Depth	TJI®	Design Live Load (LL) and Dead Load (DL) in PSF											
			Non-Snow (125%)				Snow Load Area (115%)							
			20LL + 15DL		20LL + 20DL		25LL + 15DL		30LL + 15DL		40LL + 15DL		50LL + 15DL	
			Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
16"	9½"	110	20'-0"	17'-10"	19'-1"	16'-11"	19'-2"	17'-2"	18'-5"	16'-7"	17'-2"	15'-7"	15'-11"	14'-9"
		210	21'-2"	18'-10"	20'-2"	17'-10"	20'-3"	18'-2"	19'-6"	17'-6"	18'-2"	16'-6"	17'-2"	15'-7"
		230	21'-11"	19'-6"	20'-10"	18'-6"	20'-11"	18'-9"	20'-2"	18'-1"	18'-10"	17'-0"	17'-9"	16'-2"
	11⅞"	110	23'-11"	21'-4"	22'-9"	20'-2"	22'-8"	20'-6"	21'-5"	19'-10"	19'-5"	18'-7"	17'-11"	17'-4"
		210	25'-3"	22'-6"	24'-1"	21'-4"	24'-2"	21'-8"	23'-3"	20'-11"	21'-4"	19'-8"	19'-8"	18'-8"
		230	26'-1"	23'-3"	24'-10"	22'-0"	24'-11"	22'-4"	24'-0"	21'-7"	22'-5"	20'-4"	20'-9"	19'-3"
		360	27'-9"	24'-9"	26'-5"	23'-5"	26'-7"	23'-10"	25'-6"	23'-0"	23'-11"	21'-7"	22'-7"	20'-6"
		560	31'-11"	28'-6"	30'-5"	27'-0"	30'-7"	27'-5"	29'-5"	26'-5"	27'-6"	24'-10"	26'-0"	23'-7"
	14"	110	27'-2"	24'-3"	25'-7"	23'-0"	24'-9"	23'-4"	23'-4"	22'-4"	21'-2"	20'-5"	19'-6"	18'-11"
		210	28'-9"	25'-7"	27'-4"	24'-3"	27'-1"	24'-8"	25'-7"	23'-9"	23'-3"	22'-4"	21'-5"	20'-9"
		230	29'-8"	26'-6"	28'-3"	25'-1"	28'-5"	25'-5"	27'-0"	24'-7"	24'-6"	23'-1"	22'-7"	21'-10"
		360	31'-6"	28'-2"	30'-0"	26'-8"	30'-2"	27'-1"	29'-0"	26'-1"	27'-2"	24'-7"	25'-8"	23'-4"
		560	36'-3"	32'-4"	34'-6"	30'-7"	34'-8"	31'-1"	33'-4"	30'-0"	31'-2"	28'-3"	29'-6"	26'-9"
	16"	210	31'-10"	28'-5"	30'-0"	26'-11"	29'-0"	27'-4"	27'-5"	26'-2"	24'-10"	23'-11"	22'-8"	22'-2"
		230	32'-10"	29'-4"	31'-4"	27'-9"	30'-7"	28'-2"	28'-11"	27'-3"	26'-2"	25'-3"	24'-2"	23'-5"
		360	34'-11"	31'-2"	33'-3"	29'-6"	33'-5"	30'-0"	32'-2"	28'-11"	30'-1"	27'-2"	26'-0"	25'-10"
		560	40'-1"	35'-9"	38'-2"	33'-11"	38'-4"	34'-5"	36'-11"	33'-2"	34'-6"	31'-3"	31'-8"	29'-8"
		110	18'-9"	16'-9"	17'-11"	15'-10"	18'-0"	16'-1"	17'-3"	15'-7"	15'-9"	14'-7"	14'-6"	13'-10"
19.2"	9½"	210	19'-10"	17'-9"	18'-11"	16'-9"	19'-0"	17'-0"	18'-3"	16'-5"	17'-1"	15'-5"	15'-11"	14'-8"
		230	20'-7"	18'-4"	19'-7"	17'-4"	19'-8"	17'-7"	18'-11"	17'-0"	17'-8"	16'-0"	16'-8"	15'-2"
		110	22'-5"	20'-0"	21'-5"	19'-0"	20'-9"	19'-3"	19'-7"	18'-7"	17'-9"	17'-1"	16'-4"	15'-10"
	11⅞"	210	23'-9"	21'-2"	22'-7"	20'-0"	22'-8"	20'-4"	21'-5"	19'-8"	19'-6"	18'-6"	17'-11"	17'-4"
		230	24'-6"	21'-10"	23'-4"	20'-8"	23'-5"	21'-0"	22'-6"	20'-3"	20'-6"	19'-1"	18'-11"	18'-1"
		360	26'-1"	23'-3"	24'-10"	22'-0"	24'-11"	22'-4"	24'-0"	21'-7"	22'-5"	20'-3"	21'-2"	19'-3"
		560	30'-0"	26'-9"	28'-7"	25'-4"	28'-8"	25'-9"	27'-7"	24'-10"	25'-9"	23'-4"	24'-4"	22'-2"
		110	25'-1"	22'-10"	23'-4"	21'-7"	22'-7"	21'-5"	21'-4"	20'-4"	19'-4"	18'-7"	17'-0"	17'-3"
	14"	210	27'-0"	24'-1"	25'-7"	22'-10"	24'-9"	23'-2"	23'-4"	22'-4"	21'-2"	20'-5"	18'-10"	18'-11"
		230	27'-10"	24'-10"	26'-6"	23'-7"	26'-1"	23'-11"	24'-7"	23'-1"	22'-4"	21'-6"	20'-7"	19'-11"
		360	29'-7"	26'-5"	28'-2"	25'-0"	28'-4"	25'-5"	27'-3"	24'-6"	25'-6"	23'-1"	21'-7"	21'-8"
		560	34'-0"	30'-4"	32'-5"	28'-9"	32'-7"	29'-2"	31'-4"	28'-2"	29'-3"	26'-6"	26'-5"	25'-2"
		210	29'-5"	26'-8"	27'-5"	25'-4"	26'-5"	25'-2"	25'-0"	23'-11"	22'-3"	21'-10"	18'-10"	20'-2"
	16"	230	30'-11"	27'-7"	28'-11"	26'-1"	27'-11"	26'-6"	26'-4"	25'-2"	23'-11"	23'-0"	21'-2"	21'-3"
		360	32'-10"	29'-3"	31'-3"	27'-9"	31'-5"	28'-2"	30'-2"	27'-2"	25'-7"	23'-3"	21'-7"	21'-8"
		560	37'-8"	33'-7"	35'-10"	31'-10"	36'-0"	32'-4"	34'-8"	31'-2"	31'-3"	29'-4"	26'-5"	25'-5"
		110	17'-5"	15'-6"	16'-7"	14'-8"	16'-5"	14'-11"	15'-6"	14'-5"	14'-1"	13'-6"	13'-0"	12'-7"
		210	18'-5"	16'-5"	17'-6"	15'-6"	17'-7"	15'-9"	16'-11"	15'-3"	15'-5"	14'-4"	14'-3"	13'-7"
24"	9½"	230	19'-0"	17'-0"	18'-1"	16'-1"	18'-2"	16'-4"	17'-6"	15'-9"	16'-3"	14'-10"	15'-0"	14'-0"
		110	20'-7"	18'-7"	19'-2"	17'-7"	18'-6"	17'-7"	17'-6"	16'-8"	15'-10"	15'-3"	13'-7"	14'-2"
		210	21'-11"	19'-7"	20'-11"	18'-7"	20'-4"	18'-10"	19'-2"	18'-2"	17'-5"	16'-9"	15'-0"	15'-6"
	11⅞"	230	22'-8"	20'-3"	21'-7"	19'-2"	21'-5"	19'-5"	20'-3"	18'-9"	18'-4"	17'-8"	16'-11"	16'-4"
		360	24'-1"	21'-6"	23'-0"	20'-5"	23'-1"	20'-8"	22'-2"	20'-0"	20'-5"	18'-9"	17'-3"	17'-4"
		560	27'-9"	24'-9"	26'-5"	23'-6"	26'-7"	23'-10"	25'-6"	23'-0"	23'-10"	21'-7"	21'-1"	20'-3"
		110	22'-5"	21'-1"	20'-10"	19'-6"	20'-2"	19'-2"	19'-0"	18'-2"	16'-0"	16'-7"	13'-7"	14'-7"
		210	24'-7"	22'-4"	22'-11"	21'-1"	22'-1"	21'-0"	20'-10"	19'-11"	17'-10"	18'-3"	15'-0"	16'-1"
	14"	230	25'-9"	23'-0"	24'-1"	21'-10"	23'-4"	22'-2"	22'-0"	21'-0"	20'-0"	19'-3"	16'-11"	17'-0"
		360	27'-5"	24'-6"	26'-1"	23'-2"	26'-3"	23'-6"	25'-0"	22'-8"	20'-5"	20'-2"	17'-3"	17'-4"
		560	31'-6"	28'-1"	30'-0"	26'-8"	30'-2"	27'-0"	29'-0"	26'-1"	24'-11"	23'-7"	21'-1"	20'-3"
		210	26'-3"	24'-9"	24'-6"	22'-11"	23'-8"	22'-6"	21'-9"	21'-4"	17'-10"	18'-9"	15'-0"	16'-1"
		230	27'-9"	25'-6"	25'-10"	24'-2"	24'-11"	23'-8"	23'-7"	22'-6"	20'-0"	19'-9"	16'-11"	17'-0"
	16"	360	30'-4"	27'-1"	28'-11"	25'-8"	28'-2"	26'-1"	25'-0"	24'-1"	20'-5"	20'-2"	17'-3"	17'-4"
		560	34'-10"	31'-2"	33'-2"	29'-6"	33'-4"	29'-11"	30'-6"	28'-3"	24'-11"	23'-7"	21'-1"	20'-3"

### How to Use This Table

- Determine appropriate live and dead load, and the load duration factor.
- If your slope is 6:12 or less, use the **Low** slope column. If it is between 6:12 and 12:12, use the **High** column.
- Scan down the column until you find a span that meets or exceeds the span of your application.
- Select TJI® joist and on-center spacing.

### General Notes

- Table is based on:
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Minimum roof surface slope of ¼:12.
  - 1¾" minimum end bearing and 3½" minimum intermediate bearing.
- Total load limits joist deflection to L/180.
- Live load is based on joist deflection of L/240.
- A support beam or wall at the high end is required. Ridge board applications do not provide adequate support.
- Spans shown assume no web stiffeners at intermediate bearings.



# ROOF LOAD TABLES

## Roof—115% and 125% Load Duration (PLF) for 6'–16' Spans

Depth	TJI®	Roof Joist Horizontal Clear Span																	
		6'			8'			10'			12'			14'			16'		
		Total Load		Defl.	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.
		Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240
9½"	110	289	314	*	218	237	*	175	190	*	146	159	*	114	124	112	88	95	77
	210	321	349	*	242	263	*	194	211	*	162	176	*	137	149	130	105	115	90
	230	360	392	*	272	295	*	218	237	*	182	198	*	153	166	143	117	127	99
11⅞"	110	289	314	*	218	237	*	175	190	*	146	159	*	125	136	*	110	119	*
	210	321	349	*	242	263	*	194	211	*	162	176	*	139	151	*	122	132	*
	230	360	392	*	272	295	*	218	237	*	182	198	*	156	170	*	137	149	*
	360	368	400	*	277	301	*	223	242	*	186	202	*	159	173	*	140	152	*
	560	449	488	*	338	368	*	272	295	*	227	246	*	195	212	*	170	185	*
14"	110	289	314	*	218	237	*	175	190	*	146	159	*	125	136	*	110	119	*
	210	321	349	*	242	263	*	194	211	*	162	176	*	139	151	*	122	132	*
	230	360	392	*	272	295	*	218	237	*	182	198	*	156	170	*	137	149	*
	360	368	400	*	277	301	*	223	242	*	186	202	*	159	173	*	140	152	*
	560	449	488	*	338	368	*	272	295	*	227	246	*	195	212	*	170	185	*
16"	210	321	349	*	242	263	*	194	211	*	162	176	*	139	151	*	122	132	*
	230	360	392	*	272	295	*	218	237	*	182	198	*	156	170	*	137	149	*
	360	368	400	*	277	301	*	223	242	*	186	202	*	159	173	*	140	152	*
	560	449	488	*	338	368	*	272	295	*	227	246	*	195	212	*	170	185	*

## Roof—115% and 125% Load Duration (PLF) for 18'–28' Spans

Depth	TJI®	Roof Joist Horizontal Clear Span																	
		18'			20'			22'			24'			26'			28'		
		Total Load		Defl.	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.
		Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240	Snow 115%	Non-Snow 125%	Live Load L/240
9½"	110																		
	210	83	86	64															
	230	93	94	71															
11⅞"	110	88	95	91		77	68												
	210	106	115	106	86	93	79		77	60									
	230	117	128	116	95	103	86	79	85	66									
	360	124	135	*	112	122	103	102	105	78	82	82	61						
	560	152	165	*	137	148	*	124	135	117	114	122	91	97	97	73	79	79	59
14"	110	98	106	*	84	92	*		76	75									
	210	108	118	*	97	106	*	84	91	87		77	68						
	230	122	132	*	110	119	*	93	101	95	78	85	74						
	360	124	135	*	112	122	*	102	111	*	93	101	88	86	94	70	76	76	57
	560	152	165	*	137	148	*	124	135	*	114	124	*	105	114	104	98	106	85
16"	210	108	118	*	97	106	*	89	96	*	81	88	*		75	73			
	230	122	132	*	110	119	*	100	108	*	90	97	*	76	83	79			
	360	124	135	*	112	122	*	102	111	*	93	101	*	86	94	*	80	87	76
	560	152	165	*	137	148	*	124	135	*	114	124	*	105	114	*	98	106	*

\* Indicates that Total Load value controls.

## Slope Factors

Slope	2½:12	3:12	3½:12	4:12	4½:12	5:12	6:12	7:12	8:12	9:12	10:12	11:12	12:12
Factor	1.021	1.031	1.042	1.054	1.068	1.083	1.118	1.158	1.202	1.250	1.302	1.357	1.414


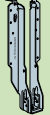
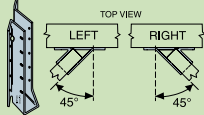
## How to Use These Tables



- Calculate actual total load in pounds per linear foot (plf).
- Select appropriate **Roof Joist Horizontal Clear Span**. For slopes greater than 2:12, approximate the increased dead load by multiplying the joist horizontal clear span by the **Slope Factor** above.
- Scan down the column to find a TJI® joist that meets or exceeds actual total load. **Total Load** values are limited to deflection of L/180. For stiffer deflection criteria, use the **Live Load L/240** values.

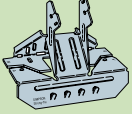
## General Notes

- Tables are based on:
  - Uniform loads.
  - No composite action provided by sheathing.
  - More restrictive of simple or continuous span.
  - Minimum roof surface slope of ¼:12.
- Total Load** limits joist deflection to L/180.

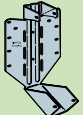
# FRAMING CONNECTORS (SIMPSON STRONG-TIE®)

Joist		Single Joist—Top Mount				Single Joist—Face Mount				Face Mount Skewed 45° Joist Hanger <sup>(1)</sup>			
													
Depth	TJI®	Hanger	Capacity (lbs)	Nailing		Hanger	Capacity (lbs)	Nailing		Hanger	Capacity (lbs)	Nailing	
				Header	Joist			Header	Joist			Header	Joist
9½"	110	ITS1.81/9.5	975	10d	N.A.	IUS1.81/9.5	950	10d	N.A.	<b>SUR/L1.81/9</b>	1,220	16d	10d x 1½"
	210	ITS2.06/9.5	1,070	10d	N.A.	IUS2.06/9.5	950	10d	N.A.	<b>SUR/L2.1/9</b>	1,330	16d	10d x 1½"
	230	ITS2.37/9.5	1,120	10d	N.A.	IUS2.37/9.5	950	10d	N.A.	<b>SUR/L2.37/9</b>	1,330	16d	10d x 1½"
11⅞"	110	ITS1.81/11.88	975	10d	N.A.	IUS1.81/11.88 <sup>(1)</sup>	975	10d	N.A.	<b>SUR/L1.81/11</b>	1,240	16d	10d x 1½"
	210	ITS2.06/11.88	1,070	10d	N.A.	IUS2.06/11.88 <sup>(1)</sup>	1,070	10d	N.A.	<b>SUR/L2.1/11</b>	1,380	16d	10d x 1½"
	230	ITS2.37/11.88	1,120	10d	N.A.	IUS2.37/11.88 <sup>(1)</sup>	1,120	10d	N.A.	<b>SUR/L2.37/11</b>	1,410	16d	10d x 1½"
	360	ITS2.37/11.88	1,140	10d	N.A.	IUS2.37/11.88 <sup>(1)</sup>	1,140	10d	N.A.	<b>SUR/L2.37/11</b>	1,430	16d	10d x 1½"
	560	ITS3.56/11.88 <sup>(6)</sup>	1,150	10d	N.A.	IUS3.56/11.88 <sup>(1)(6)</sup>	1,150	10d	N.A.	<b>SUR/L410</b>	1,495	16d	16d
14"	110	ITS1.81/14	975	10d	N.A.	IUS1.81/14 <sup>(1)</sup>	975	10d	N.A.	<b>SUR/L1.81/14</b>	1,240	16d	10d x 1½"
	210	ITS2.06/14	1,070	10d	N.A.	IUS2.06/14 <sup>(1)</sup>	1,070	10d	N.A.	<b>SUR/L2.1/14</b>	1,380	16d	10d x 1½"
	230	ITS2.37/14	1,120	10d	N.A.	IUS2.37/14 <sup>(1)</sup>	1,120	10d	N.A.	<b>SUR/L2.37/14</b>	1,410	16d	10d x 1½"
	360	ITS2.37/14	1,140	10d	N.A.	IUS2.37/14 <sup>(1)</sup>	1,140	10d	N.A.	<b>SUR/L2.37/14</b>	1,430	16d	10d x 1½"
	560	ITS3.56/14 <sup>(6)</sup>	1,150	10d	N.A.	IUS3.56/14 <sup>(1)(6)</sup>	1,150	10d	N.A.	<b>SUR/L414</b>	1,460	16d	16d
16"	210	ITS2.06/16	1,070	10d	N.A.	IUS2.06/16 <sup>(1)</sup>	1,070	10d	N.A.	<b>SUR/L2.1/16</b>	1,380	16d	10d x 1½"
	230	ITS2.37/16	1,120	10d	N.A.	IUS2.37/16 <sup>(1)</sup>	1,120	10d	N.A.	<b>SUR/L2.37/16</b>	1,410	16d	10d x 1½"
	360	ITS2.37/16	1,140	10d	N.A.	IUS2.37/16 <sup>(1)</sup>	1,140	10d	N.A.	<b>SUR/L2.37/16</b>	1,430	16d	10d x 1½"
	560	ITS3.56/16 <sup>(6)</sup>	1,150	10d	N.A.	IUS3.56/16 <sup>(1)(6)</sup>	1,150	10d	N.A.	<b>SUR/L414</b>	1,460	16d	16d

Joist		Double Joist—Top Mount				Double Joist—Face Mount			
									
Depth	TJI®	Hanger	Capacity (lbs)	Nailing		Hanger	Capacity (lbs)	Nailing	
				Header	Joist			Header	Joist
9½"	110	<b>MIT49.5</b>	2,115	16d	10d x 1½"	<b>MIU3.56/9<sup>(7)</sup></b>	2,215	16d	10d x 1½"
	210	<b>MIT4.28/9.5</b>	2,115	16d	10d x 1½"	<b>MIU4.28/9</b>	2,305	16d	10d x 1½"
	230	<b>MIT359.5-2</b>	2,115	16d	10d x 1½"	<b>MIU4.75/9</b>	2,305	16d	10d x 1½"
11⅞"	110	<b>MIT411.88</b>	2,115	16d	10d x 1½"	<b>MIU3.56/11<sup>(7)</sup></b>	2,215	16d	10d x 1½"
	210	<b>MIT4.28/11.88</b>	2,115	16d	10d x 1½"	<b>MIU4.28/11<sup>(7)</sup></b>	2,395	16d	10d x 1½"
	230	<b>MIT3511.88-2</b>	2,115	16d	10d x 1½"	<b>MIU4.75/11<sup>(7)</sup></b>	2,490	16d	10d x 1½"
	360	<b>MIT3511.88-2</b>	2,115	16d	10d x 1½"	<b>MIU4.75/11</b>	2,525	16d	10d x 1½"
	560	<b>B7.12/11.88</b>	2,925	16d	16d	<b>HU412-2</b>	2,380	16d	16d
14"	110	<b>MIT414</b>	2,115	16d	10d x 1½"	<b>MIU3.56/14<sup>(7)</sup></b>	2,215	16d	10d x 1½"
	210	<b>MIT4.28/14</b>	2,115	16d	10d x 1½"	<b>MIU4.28/14<sup>(7)</sup></b>	2,395	16d	10d x 1½"
	230	<b>MIT3514-2</b>	2,115	16d	10d x 1½"	<b>MIU4.75/14<sup>(7)</sup></b>	2,490	16d	10d x 1½"
	360	<b>MIT3514-2</b>	2,115	16d	10d x 1½"	<b>MIU4.75/14<sup>(7)</sup></b>	2,525	16d	10d x 1½"
	560	<b>B7.12/14</b>	2,925	16d	16d	<b>HU414-2</b>	2,925	16d	16d
16"	210	<b>LBV4.28/16</b>	2,395	16d	10d x 1½"	<b>MIU4.28/16<sup>(7)</sup></b>	2,395	16d	10d x 1½"
	230	<b>LBV4.75/16</b>	2,115	16d	10d x 1½"	<b>MIU4.75/16<sup>(7)</sup></b>	2,490	16d	10d x 1½"
	360	<b>LBV4.75/16</b>	2,115	16d	10d x 1½"	<b>MIU4.75/16<sup>(7)</sup></b>	2,525	16d	10d x 1½"
	560	<b>B7.12/16</b>	2,925	16d	16d	<b>HU414-2</b>	2,925	16d	16d

Joist		Variable Slope Seat Connector <sup>(2)</sup>			
					
TJI®	Hanger	Capacity (lbs)	Nailing		
			Header	Joist	
110	VPA25	975	10d	10d x 1½"	
210	VPA2.1	1,070	10d	10d x 1½"	
230	VPA35	1,120	10d	10d x 1½"	
360	VPA35	1,140	10d	10d x 1½"	
560	VPA4	1,230	10d	10d x 1½"	

*Hanger information on these two pages was provided by either Simpson Strong-Tie® or USP Structural Connectors®. For additional information, please refer to their literature.*

Joist		Variable Slope Seat Joist Hanger <sup>(3)</sup>			
					
TJI®	Hanger	Capacity (lbs)		Nailing	
		Sloped Only	Sloped and Skewed	Header	Joist
110	<b>LSSU125</b>	1,110 <sup>(1)</sup>	995	10d	10d x 1½"
210	<b>LSSU2.1</b>	1,110 <sup>(1)</sup>	995	10d	10d x 1½"
230	<b>LSSU135</b>	1,110 <sup>(1)</sup>	995	10d	10d x 1½"
360	<b>LSSU135</b>	1,110 <sup>(1)</sup>	995	10d	10d x 1½"
560	<b>LSSU410</b>	1,725 <sup>(1)</sup>	1,625	16d	10d x 1½"

## General Notes


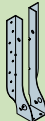
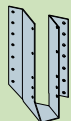
**Bold italic** hangers require web stiffeners.


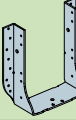
Capacities will vary with different nailing criteria or other support conditions; contact your iLevel representative for assistance.

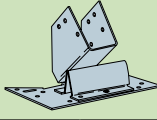
- Hanger capacities shown are either joist bearing capacity or hanger capacity—whichever is less. Joist end reaction must be checked to ensure it does not exceed the capacity shown in the tables.
- All capacities are for downward loads at 100% duration of load.
- Fill all round, dimple, and positive-angle nail holes.
- Use sloped seat hangers and beveled web stiffeners when TJI® joist slope exceeds ¼:12.
- Leave ⅛" clearance (⅛" maximum) between the end of the supported joist and the header or hanger.
- Nails: 16d = 0.162" x 3½", 10d = 0.148" x 3", and 10d x 1½" = 0.148" x 1½".

See additional notes on page 19

# FRAMING CONNECTORS (USP STRUCTURAL CONNECTORS®)

Joist		Single Joist—Top Mount				Single Joist—Face Mount <sup>(1)</sup>				Face Mount Skewed 45° Joist Hanger <sup>(1)</sup>			
													
Depth	TJI®	Hanger	Capacity (lbs)	Nailing		Hanger	Capacity (lbs)	Nailing		Hanger	Capacity (lbs)	Nailing	
				Header	Joist			Header	Joist			Header	Joist
9½"	110	TH017950	975	10d	10d x 1½"	THF17925	910	10d	10d x 1½"	SKH1720L/R	945	10d	10d x 1½"
	210	TFL2095	1,070	10d	10d x 1½"	THF20925	910	10d	10d x 1½"	SKH2020L/R	1,035	10d	10d x 1½"
	230	TFL2395	1,120	10d	10d x 1½"	THF23925	1,245	10d	10d x 1½"	SKH2320L/R	1,090	10d	10d x 1½"
11⅞"	110	TH017118	975	10d	10d x 1½"	THF17112	910	10d	10d x 1½"	SKH1720L/R	945	10d	10d x 1½"
	210	TFL20118	1,070	10d	10d x 1½"	THF20112	910	10d	10d x 1½"	SKH2020L/R	1,035	10d	10d x 1½"
	230	TFL23118	1,120	10d	10d x 1½"	THF23118	1,245	10d	10d x 1½"	SKH2320L/R	1,090	10d	10d x 1½"
	360	TFL23118	1,140	10d	10d x 1½"	THF23118	1,265	10d	10d x 1½"	SKH2320L/R	1,110	10d	10d x 1½"
14"	560	TH035118	1,430	10d	10d x 1½"	THF35112	1,460	10d	10d x 1½"	SKH410L/R <sup>(4)</sup>	1,460	10d	16d
	110	TFL1714	975	10d	10d x 1½"	THF17140	975	10d	10d x 1½"	SKH1720L/R	945	10d	10d x 1½"
	210	TFL2014	1,070	10d	10d x 1½"	THF20140	1,070	10d	10d x 1½"	SKH2020L/R	1,035	10d	10d x 1½"
	230	TFL2314	1,120	10d	10d x 1½"	THF23140	1,245	10d	10d x 1½"	SKH2324L/R	1,090	10d	10d x 1½"
	360	TFL2314	1,140	10d	10d x 1½"	THF23140	1,265	10d	10d x 1½"	SKH2324L/R	1,110	10d	10d x 1½"
16"	560	TH035140	1,430	10d	10d x 1½"	THF35140	1,460	10d	10d x 1½"	SKH414L/R <sup>(4)</sup>	1,460	10d	16d
	210	TFL2016	1,070	10d	10d x 1½"	THF20157	1,425	10d	10d x 1½"	SKH2024L/R	1,035	10d	10d x 1½"
	230	TFL2316	1,120	10d	10d x 1½"	THF23160	1,245	10d	10d x 1½"	SKH2324L/R	1,090	10d	10d x 1½"
	360	TFL2316	1,140	10d	10d x 1½"	THF23160	1,265	10d	10d x 1½"	SKH2324L/R	1,110	10d	10d x 1½"
560	TH035160	1,430	10d	10d x 1½"	THF35157	1,460	10d	10d x 1½"	SKH414L/R <sup>(4)</sup>	1,460	10d	16d	

Joist		Double Joist—Top Mount				Double Joist—Face Mount <sup>(1)</sup>			
									
Depth	TJI®	Hanger	Capacity (lbs)	Nailing		Hanger	Capacity (lbs)	Nailing	
				Header	Joist			Header	Joist
9½"	110	TH035950	2,050	10d	10d x 1½"	THF35925	1,370	10d	10d x 1½"
	210	TH020950-2	2,330	16d	10d	THF20925-2	1,390	10d	10d
	230	TH023950-2	2,660	16d	10d	THF23925-2	1,625	10d	10d
11⅞"	110	TH035118	2,050	10d	10d x 1½"	THF35112	1,825	10d	10d x 1½"
	210	TH020118-2	2,330	16d	10d	THF20112-2	1,855	10d	10d
	230	TH023118-2	2,730	16d	10d	THF23118-2	1,855	10d	10d
	360	TH023118-2	2,770	16d	10d	THF23118-2	1,855	10d	10d
	560	BPH71118	3,185	16d	10d	HD7120	2,255	16d	10d
14"	110	TH035140	2,150	10d	10d x 1½"	THF35140	2,215	10d	10d x 1½"
	210	TH020140-2	2,330	16d	10d	THF20140-2	2,320	10d	10d
	230	TH023140-2	2,730	16d	10d	THF23140-2	2,490	10d	10d
	360	TH023140-2	2,770	16d	10d	THF23140-2	2,525	10d	10d
	560	BPH7114	3,185	16d	10d	HD7140	2,820	16d	10d
16"	210	TH020160-2	2,330	16d	10d	THF20140-2	2,320	10d	10d
	230	TH023160-2	2,730	16d	10d	THF23160-2	2,490	10d	10d
	360	TH023160-2	2,770	16d	10d	THF23160-2	2,525	10d	10d
	560	BPH7116	3,185	16d	10d	HD7140	2,820	16d	10d

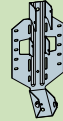
Joist		Variable Slope Seat Connector <sup>(5)</sup>			
					
TJI®	Hanger	Capacity (lbs)	Nailing		
			Header	Joist	
110	TMP175	1,150	10d	10d x 1½"	
	TMPH175	1,220	10d	10d x 1½"	
210	TMP21	1,290	10d	10d x 1½"	
	TMPH21	1,330	10d	10d x 1½"	
230	TMP23	1,330	10d	10d x 1½"	
	TMPH23	1,330	10d	10d x 1½"	
360	TMP23	1,505	10d	10d x 1½"	
	TMPH23	1,505	10d	10d x 1½"	
560	TMP4	1,725	10d	10d x 1½"	
	TMPH4	1,725	10d	10d x 1½"	

## Support Requirements

- Support material assumed to be iLevel® engineered lumber or sawn lumber (Douglas fir or southern pine species).
- Minimum support width for single- and double-joist top mount hangers is 3".
- Minimum support width for face mount hangers with 10d and 16d nails is 1½" and 1¾", respectively.

## Footnotes:

- Face mount hanger capacities may be increased up to 15% for snow roofs or 25% for non-snow roofs. Maximum increase for LSSU, LSSUI, and LSSH hangers is 15%.
- VPA connectors are allowed on slopes of 3:12 through 12:12 only.
- LSSU, LSSUI, and LSSH hangers can be field adjusted for slopes and skews of up to 45 degrees. Additional lateral restraints are required for 16" deep TJI® joists.
- Miter cut is required at end of joist.
- TMP connectors are allowed on slopes of 1:12 through 6:12 only, and TMPH connectors are allowed on slopes of 6:12 through 12:12 only.
- Capacity may be increased to 1,330 lbs if web stiffeners are used.

Joist		Variable Slope Seat Joist Hanger <sup>(3)</sup>			
					
TJI®	Hanger	Capacity (lbs)		Nailing	
		Sloped Only	Sloped and Skewed	Header	Joist
110	LSSH179	1,140 <sup>(1)</sup>	1,140 <sup>(1)</sup>	10d	10d x 1½"
210	LSSH20	1,140 <sup>(1)</sup>	1,140 <sup>(1)</sup>	10d	10d x 1½"
230	LSSH23	1,140 <sup>(1)</sup>	1,140 <sup>(1)</sup>	10d	10d x 1½"
360	LSSH23	1,140 <sup>(1)</sup>	1,140 <sup>(1)</sup>	10d	10d x 1½"
560	LSSH35	1,595 <sup>(1)</sup>	1,595	16d	10d x 1½"

See General Notes on page 18



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**Technical Support:** Need technical help? iLevel has one of the largest networks of engineers and sales representatives in the business. Call us for help, and a skilled member from our team of experts will answer your questions and work with you to develop solutions that meet all your structural framing needs.



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