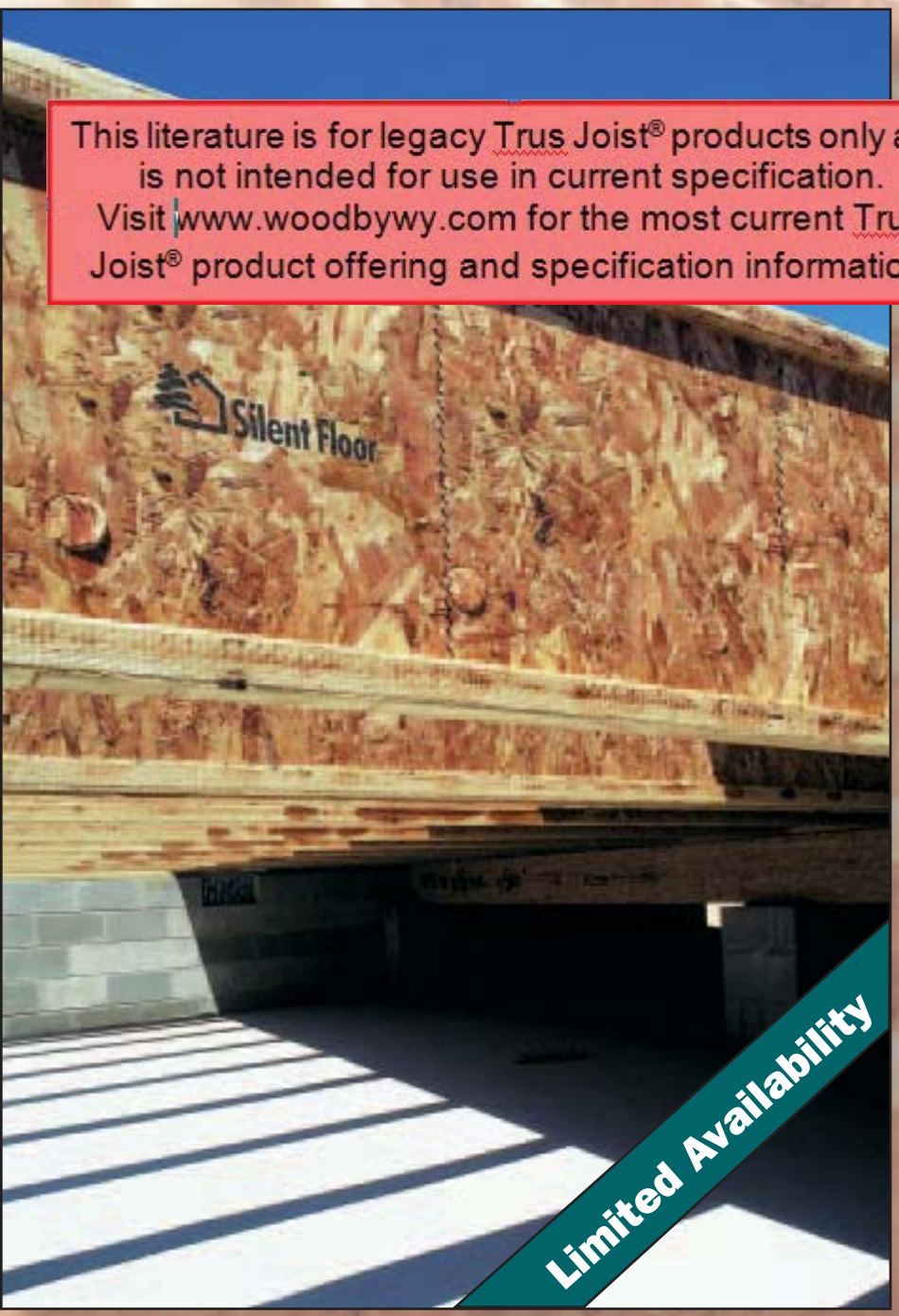
Trus Joist®
A Weyerhaeuser Business



This literature is for legacy Trus Joist® products only and is not intended for use in current specification. Visit www.woodbywy.com for the most current Trus Joist® product offering and specification information.

SPECIFIER'S GUIDE

18" and 20" TJI®/Pro™ 350 & 550 Joists

Featuring the Silent Floor® System for Residential Applications

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

TJI® Joist
Trus Joist™

1-800-628-3997
www.trusjoist.com

Legacy Literature
See Note on Front Cover

Service You Can Count On

Unparalleled Technical Support

Our goal is to help you build solid, durable and comfortable homes by providing strong technical support to specifiers, dealers and builders located throughout North America. With a staff of over 175 Trus Joist technical representatives, we are uniquely prepared to train our partners in providing comprehensive specification and installation. We enhance our training with cutting edge automation tools; these products include:

TJ-Beam® software – produces single-member sizing options in floor and roof applications for TJI® joists, Microllam® LVL, TimberStrand® LSL and Parallam® PSL beams, headers and columns.

TJ-Xpert® software – automatically tracks loads throughout the structure and develops sizing solutions, material lists, framing plans and installation details.

TJ-YardMate™ software – produces inventory solutions and cut lists for each home package with the least amount of cutting and waste.

Our support doesn't stop there. The skilled team of Trus Joist representatives—the industry's largest—isn't afraid to get involved and make things happen. If you call us with a problem that you believe may be caused by our products, our representative will contact you within one business day to evaluate the problem and help solve it. *GUARANTEED.*

This guide is intended for use with 18" and 20" TJI® joists in single- and multi-family applications. These residential products/depths may have limited availability through our network of distributors and dealers.

For commercial applications please refer to our COMMERCIAL PRODUCT MANUAL or the Commercial section of our STRUCTURAL PRODUCTS DESIGN MANUAL. Commercial products are typically designed, manufactured and sold by Trus Joist for each specific job.

For more information on any Trus Joist product, please call 1-800-628-3997.

CODE EVALUATIONS
NER-200 • ICBO ES PFC-4354


Silent Floor Joist
Trus Joist
HOMEBUYER'S GUARANTEE
We guarantee that the Trus Joist products used in your home have been manufactured to precise tolerances and are free from defects in materials and workmanship. In the unlikely event that your Silent Floor® joist develops squeaks or any other problem caused by such defects, and provided that your floor joists have been properly installed, we will promptly remedy that problem at no cost to you.
In addition, if you call us with a problem that you believe may be caused by our products, our representative will contact you within one business day to evaluate the problem and help solve it. Guaranteed.
This guarantee is effective for the life of your home.
1-800-628-3997
Part of the FrameWorks® Building System

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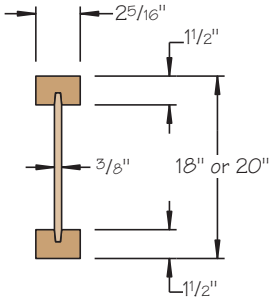
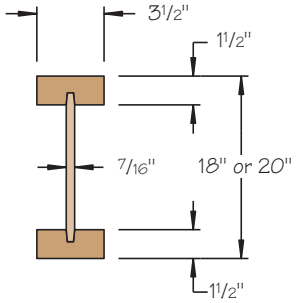
Design Properties



TJI®/Pro™ 350 joists
Top and bottom flanges of 2 5/16" x 1 1/2" Microllam® LVL with 3/8" Performance Plus® web.



TJI®/Pro™ 550 joists
Top and bottom flanges of 3 1/2" x 1 1/2" Microllam® LVL with 7/16" Performance Plus® web.

General Notes

- Design reaction includes all loads on the joist. Design shear is computed at the face of supports including all loads on the span(s). Allowable shear may sometimes be increased at interior supports in accordance with ICBO ES PFC-4354 and NER-200; these increases are reflected in span tables.
- Reaction values are based on a minimum bearing length of 1 3/4" at ends and 3 1/2" at intermediate supports.
- This formula approximates the uniform load deflection of Δ (inches):

For TJI®/Pro™ 350 Joists

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

For TJI®/Pro™ 550 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 below

Design Properties (100% Load Duration)

TJI®/Pro™	Depth	Basic Properties				Reaction Properties		
		Joist Weight (lbs/ft)	Maximum Resistive Moment (ft-lbs)	Joist Only EI x 10⁶ (in.² lbs)	Maximum Vertical Shear (lbs)	Maximum End Reaction (lbs)	Maximum Intermediate Reaction (lbs)	
							No Web Stiffeners	With Web Stiffeners
350	18"	3.7	8,000	1,057	2,155	1,160	2,320	2,680
	20"	3.9	9,040	1,354	2,165	1,160	2,320	2,680
550	18"	5.0	12,285	1,566	2,535	1,400	3,355	3,830
	20"	5.3	13,885	1,998	2,740	1,400	3,355	3,830

TJI® joists are intended for dry-use, non-treated applications

How to Use These Tables

1. Determine the appropriate LIVE LOAD DEFLECTION.
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.

General Notes

- Tables are based on:
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Clear distance between supports (1 3/4" minimum end bearing).
- Assumed composite action with a single layer of 24" on-center span-rated, glue-nailed wood sheathing for deflection only **(spans shall be reduced 5" when sheathing panels are nailed only).**
- A code-allowed increase for repetitive member use has been included.
- For loading conditions not shown, refer to load table below.

Minimum Criteria Per Code

L/360 Live Load Deflection

	Depth	TJI®/Pro™	16" o.c.	19.2" o.c.	24" o.c.
40 PSF LL/ 10 PSF DL*	18"	350	31'-5"(1)	26'-8"(1)	21'-4"(1)
		550	35'-6"	33'-6"(1)	26'-9"(1)
	20"	350	32'-0"(1)	26'-8"(1)	21'-4"(1)
		550	***38'-6"***	33'-6"(1)	26'-9"(1)
40 PSF LL/ 25 PSF DL	18"	350	24'-7"(1)	20'-6"(1)	16'-4"(1)
		550	***32'-2"(1)***	26'-9"(1)	21'-5"(1)
	20"	350	24'-7"(1)	20'-6"(1)	16'-4"(1)
		550	***32'-2"(1)***	26'-9"(1)	21'-5"(1)

Improved Performance System

L/480 Live Load Deflection

	Depth	TJI®/Pro™	16" o.c.	19.2" o.c.	24" o.c.
40 PSF LL/ 10 PSF DL*	18"	350	28'-6"(1)	26'-8"(1)	21'-4"(1)
		550	32'-1"	30'-3"	26'-9"(1)
	20"	350	30'-11"(1)	26'-8"(1)	21'-4"(1)
		550	34'-10"	32'-10"(1)	26'-9"(1)
40 PSF LL/ 25 PSF DL	18"	350	24'-7"(1)	20'-6"(1)	16'-4"(1)
		550	***32'-1"(1)***	26'-9"(1)	21'-5"(1)
	20"	350	24'-7"(1)	20'-6"(1)	16'-4"(1)
		550	***32'-2"(1)***	26'-9"(1)	21'-5"(1)

*12 psf dead load at TJI®/Pro™ 550 joists.

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".

(1) Web stiffeners are required at intermediate supports of continuous span joists in conditions where the intermediate bearing length is **less** than 5 1/4" and the span on either side of the intermediate bearing is greater than the following spans:

TJI®/Pro™	40 PSF Live Load, 10 PSF Dead Load*			40 PSF Live Load, 25 PSF Dead Load		
	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
350	27'-8"	23'-1"	18'-5"	21'-3"	17'-8"	14'-2"
550	Not Required	32'-1"	25'-8"	30'-10"	25'-8"	20'-6"

*12 psf dead load at TJI®/Pro™ 550 joists.

TJ-Pro™ Rating System FLOOR PERFORMANCE See Pages 10 & 11

Floor Load Table

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 horizontally to find a TJI® joist that meets or exceeds actual total and live loads.

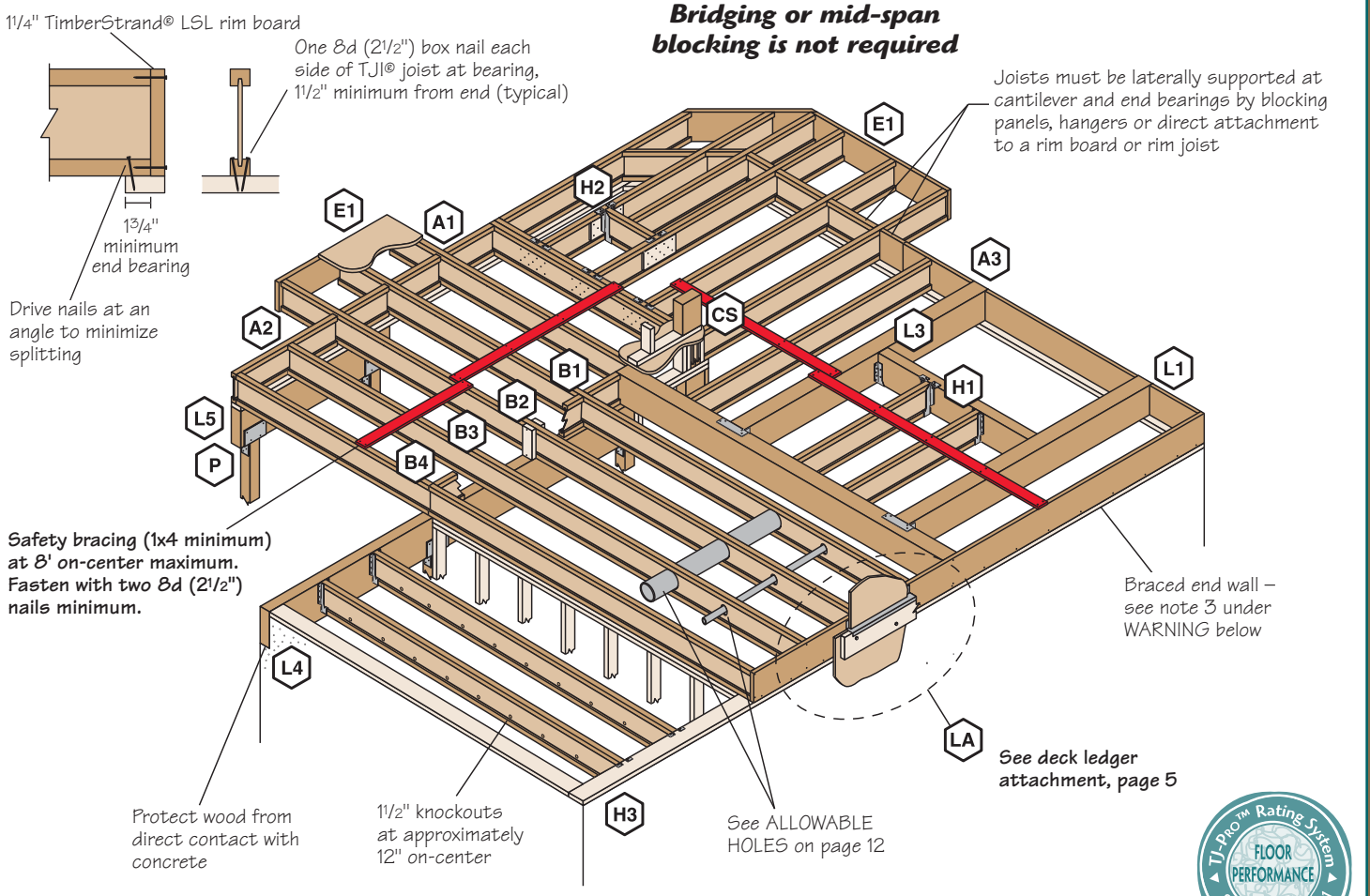
General Notes

- Table is based on:
  - Uniform loads.
  - No composite action provided by sheathing.
  - More restrictive of simple or continuous span. Ratio of short span to long span should be 0.4 or greater to prevent uplift
- TOTAL LOAD limits joist deflection to L/240.
- LIVE LOAD is based on joist deflection of L/480.
- If 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.

Floor—100% (PLF)

Joist Clear Span	TJI®/Pro™ 350				TJI®/Pro™ 550			
	18"		20"		18"		20"	
	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load
6'		301		301		436		436
8'		227		227		329		329
10'		182		182		264		264
12'		152		152		220		220
14'		131		131		189		189
16'		114		114		166		166
18'		102		102		147		147
20'		92		92		133		133
22'		83		83		121		121
24'				76	107	111		111
26'					86	102		102
28'					70	95	88	95
30'					57	89	72	89
32'					48	83	60	83
34'					40	78	51	78

Typical Silent Floor® System



TJ-Pro™ Rating System FLOOR PERFORMANCE See Pages 10 & 11

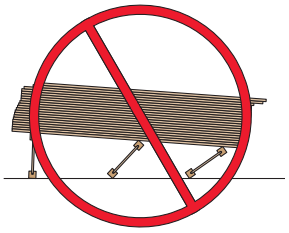
DO NOT allow workers to walk on joists until braced. INJURY MAY RESULT.

WARNING

Joists are unstable until braced laterally

BRACING INCLUDES:

- Blocking
- Hangers
- Rim Board
- Sheathing
- Rim Joist
- Safety Bracing



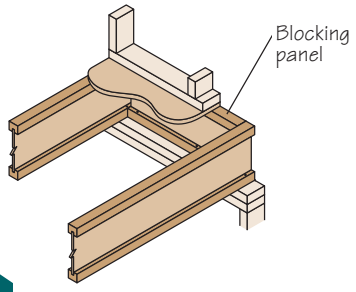
DO NOT stack building materials on unsheathed joists. Stack only over beams or walls.

WARNING NOTES:

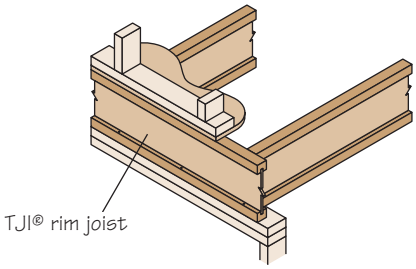
Lack of concern for proper bracing during construction can result in serious accidents.

Under normal conditions if the following guidelines are observed, accidents will be avoided.

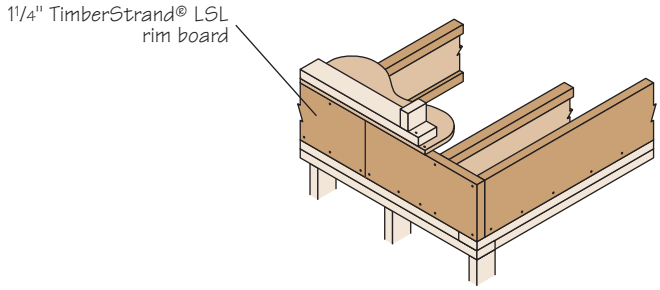
1. All blocking, hangers, rim boards and rim joists at the end supports of the TJI® joists must be completely installed and properly nailed.
2. Lateral strength, like a braced end wall or an existing deck, must be established at the ends of the bay. This can also be accomplished by a temporary or permanent deck (sheathing) fastened to the first 4 feet of joists at the end of the bay.
3. Safety bracing lines 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—like a worker or one layer of unnailed sheathing.
4. Sheathing must be totally attached to each TJI® joist before additional loads can be placed on the system.
5. Ends of cantilevers require safety bracing lines on both the top and bottom flanges.
6. The flanges must remain straight within a tolerance of ½" from true alignment.



A1

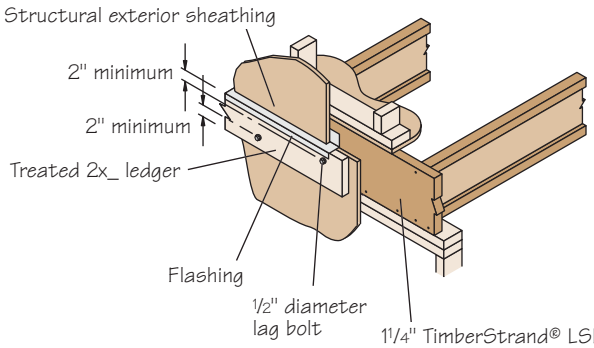


A2 ***Must have 1 3/4" minimum joist bearing at ends***



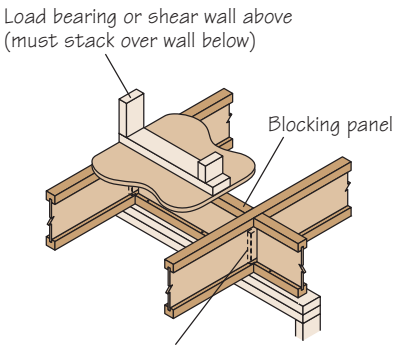
A3

Exterior Deck Attachment

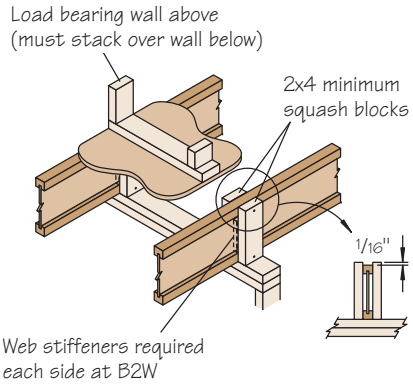


Allowable load is 325 lbs per 1/2" diameter lag bolt

LA

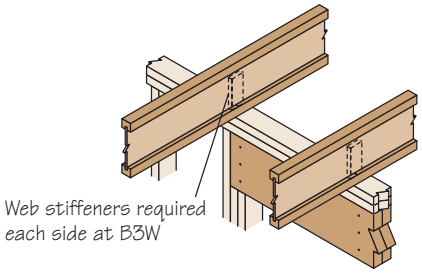


B1 B1W



B2 B2W

Intermediate Bearing – No Load Bearing Wall Above



B3 B3W

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

General Notes

Minimum Bearing Length

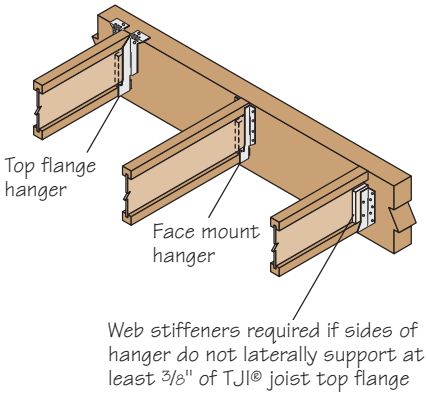
- **At joist ends:** 1 3/4"
- **At intermediate supports:** 3 1/2"

Blocking Panels, Rim Boards or Rim Joists

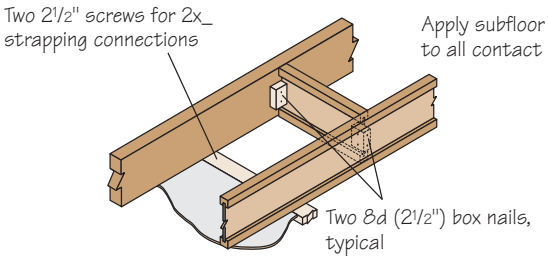
- Check vertical load transfer at bearings.
  Allowable uniform vertical loads:
  TJI® blocking . . . . . .1450 plf
  TJI® rim joist . . . . . .1450 plf
  TimberStrand® LSL – 1 1/4" . . . . . .3450 plf
  Loads may not be increased for duration of load.
- Bracing per code shall be carried to the foundation.
- For information on lateral load transfer, contact your Trus Joist representative.

Nailing Requirements

- **TJI® joists at bearings:** Two 8d (2 1/2") box nails (1 each side), 1 1/2" minimum from end.
- **Blocking panels, rim joist or rim board to bearing plate:**
  TJI® blocking panels or rim joist: 10d (3") box nails at 6" on-center.
  Trus Joist rim board: Toenail with 10d (3") box nails at 6" on-center or 16d (3 1/2") box nails at 12" on-center.
- **Rim board, rim joist or closure to TJI® joist:**
  1 3/4" width or less: 10d (3") box nails, one each at top and bottom flange.
  TJI®/Pro™ 350 rim joist: 16d (3 1/2") box nails, one each at top and bottom flange.
  TJI®/Pro™ 550 rim joist: Toenail joist to rim joist with one 10d (3") box nail each side of joist top flange.
- **2x4 minimum squash blocks:** 10d (3") box nails, one each at top and bottom flange.

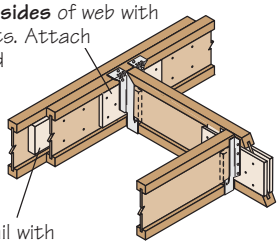


H1



PB1 ***Applications shown in this guide do not require blocking, strapping or a directly applied ceiling; however, backspan bracing of cantilever applications is required when specified by software***

Backer block: Install tight to top flange (tight to bottom flange with face mount hangers), **both sides** of web with single TJI® joists. Attach with **fifteen** 10d (3") box nails, clinched when possible.



Filler block: Nail with **fifteen** 10d (3") box nails, clinched. Use **fifteen** 16d (3½") box nails from each side with TJI®/Pro™ 550 joists.

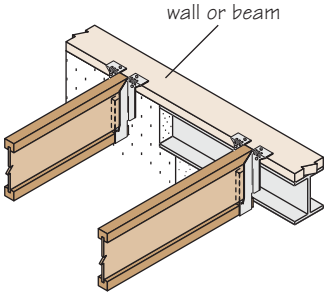
Filler and Backer Block Sizes

TJI®/Pro™ Depth	350 18" or 20"	550 18" or 20"
Filler Block* (Detail H2)	2x12 + ½" sheathing	Two 2x12
Backer Block* (Detail F1 or H2)	1" net	2x12

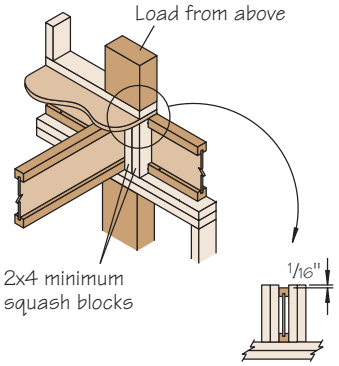
* If necessary, increase filler and backer block height for face mount hangers and maintain ⅛" gap at top of joist; see detail W. Filler and backer block dimensions should accommodate required nailing without splitting.

H2 ***With top flange hangers, backer block required only for downward loads exceeding 250 lbs or for uplift conditions***

Bearing plate: Flush plate with inside face of wall or beam



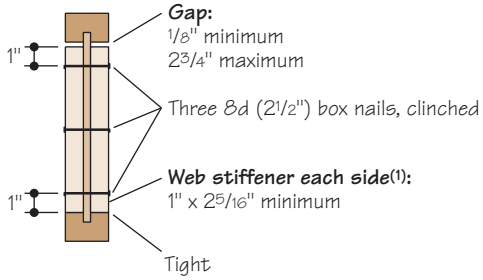
H3



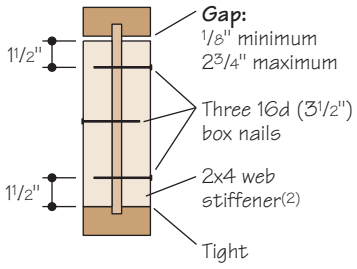
CS ***Use 2x4 minimum squash blocks to transfer load around TJI® joist***

Web Stiffener Attachment

TJI®/Pro™ 350 Joists



TJI®/Pro™ 550 Joists



W ***(1) Web stiffener material shall be PS1-95 or PS2-92 sheathing, face grain vertical***
(2) 2x4 construction grade or better

Fastening of Sheathing to TJI® Joist Flanges and Trus Joist Rim Board

Nail Size	Closest On-Center Spacing Per Row	
	TJI®/Pro™ 350 550	TimberStrand® LSL Rim Board
8d (2½") box	2"	4"
8d (2½") common	2"	4"
10d (3"), 12d (3¼") box	2"	4"
10d (3"), 12d (3¼") common	3"	4"
16d (3½") common	N.A.(1)	6"(2)

(1) When nailing through the wall sill plate and floor sheathing, closest on-center spacing is 4" (1⅜" max. penetration).

(2) When nailing through the wall sill plate and floor sheathing, closest on-center spacing is 3" (1⅜" max. penetration).

General Notes

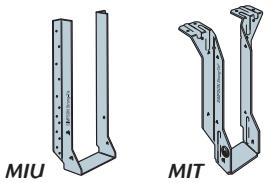
- Maximum spacing of nails is 24" on-center.
- If more than one row of nails is used, the rows must be offset at least ½" and staggered.
- 14 ga. staples may be substituted for 8d (2½") nails if minimum penetration of 1" is achieved.
- Table also applies for the attachment of TJI® rim joists and blocking panels to the wall plate.

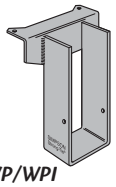
See General Notes on page 5

Simpson Strong-Tie®

Single Joist Hangers

	Depth	TJI®/Pro™	Hanger
Top Flange	18"	350	MIT3518
		550	MIT418(1)
	20"	350	MIT3520
		550	MIT420(1)
Face Mount	18"	350	MIU2.37/18
		550	MIU418
	20"	350	MIU2.37/20
		550	***MIU420***





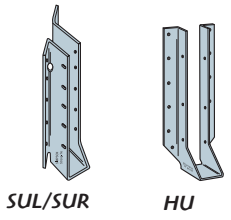
(1) Limit load for hangers supported by TJI® joist headers to 1,230 lbs or subtract 36" from floor span charts.

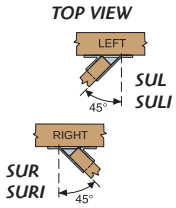
Joist: 10d x 1½" nails.

Header: 10d (3") common nails. Top flange hangers require 10d x 1½" for TJI® joist headers or single 2x_ nailers.

Double Joist Hanger

	Depth	TJI®/Pro™	Hanger	Maximum Load (lbs) Floor
Top Flange	18"	350	***WP3518-2***	See Table A
		550	***WPI418-2***	
	20"	350	***WP3520-2***	
		550	***WPI420-2***	
Face Mount	18"	350	***MIU4.75/18***	2460
		550	***HU414-2***	2250
	20"	350	***HU3520-2***	2250
		550	***HU414-2***	2250





Joist: 10d x 1½" nails.

Header: 10d (3") common nails. Top flange hangers require 10d x 1½" for TJI® joist headers or single 2x_ nailers.

Table A—Maximum Load (lbs) for Top Flange Hangers

Header Material	WP/WPI
Beam	2000
TJI® Joist Header	2030
Wood Nailer	2500

• Maximum load for top flange hangers may not be increased for duration of load.

Face Mount Skewed 45° Joist Hanger

Depth	TJI®/Pro™	Hanger
18"	350	***SURI3514/20 or SULI3514/20***
	550	***SUR414 or SUL414***
20"	350	***SURI3514/20 or SULI3514/20***
	550	***SUR414 or SUL414***

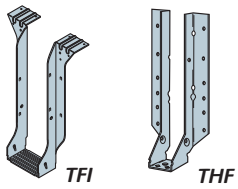
Joist: 10d x 1½" nails.

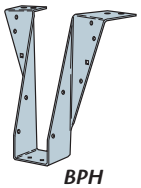
Header: 16d (3½") common nails.

USP Lumber Connectors™

Single Joist Hangers

	Depth	TJI®/Pro™	Hanger
Top Flange	18"	350	TFI3518
		550	TFI418
	20"	350	TFI3520
		550	TFI420
Face Mount	18"	350	***THF23180***
		550	***THF35165***
	20"	350	***THF23180***
		550	***THF35165***



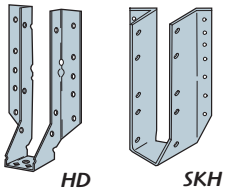


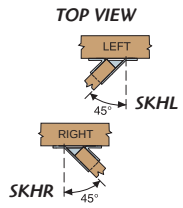
Joist: 10d x 1½" nails.

Header: 10d (3") common nails. Use 16d x 3½" for top flange hangers. Top flange hangers may not be used with TJI® headers.

Double Joist Hangers

	Depth	TJI®/Pro™	Hanger	Maximum Load (lbs) Floor
Top Flange	18"	350	***THO23180-2***	See Table A
		550	***BPH7118***	
	20"	350	***THO23200-2***	
		550	***BPH7120***	
Face Mount	18"	350	***THF23160-2***	2470
		550	***HD7180(1)***	3275
	20"	350	***THF23160-2***	2470
		550	***HD7180(1)***	3275





(1) Requires 2" minimum width header.

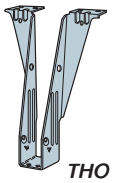
Joist: 10d (3") common nails.

Header: 16d (3½") common nails.
Use 10d (3") common nails for THF face mount hangers.
Top flange hangers may not be used with TJI® joist headers.

Table A—Maximum Load (lbs) for Top Flange Hangers

Header Material	THO	BPH
Beam	2685	3280
Wood Nailer	1000	1450

• Maximum load for top flange hangers may not be increased for duration of load.



Face Mount Skewed 45° Joist Hanger

Depth	TJI®/Pro™	Hanger
18"	350	***SKH2324R or SKH2324L***
	550	***SKH418R or SKH418L(1)***
20"	350	***THF23140-SKH45L or R(1)***
	550	***SKH418R or SKH418L(1)***

(1) Miter cut required on end of joist.

Joist: 10d x 1½" nails.

Header: 10d (3") common nails.

General Notes

The listed hangers are manufactured by either Simpson Strong-Tie® Company, Inc. or United Steel Products Company. For additional information, refer to their literature.

Contact your Trus Joist representative for assistance with other hanger or support conditions.

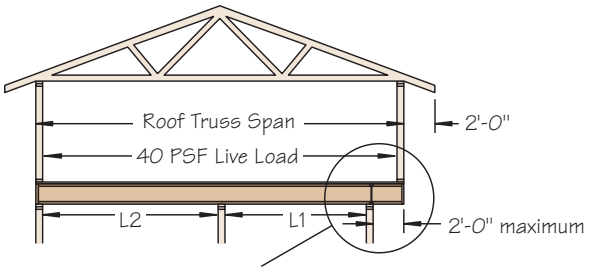
Bold italic hangers require web stiffeners.

- Some hangers shown have less capacity than that of the TJI® joists. The joist hanger capacity must be checked for applications beyond the floor span tables or when maximum loads are given.
- Refer to manufacturer's literature for uplift capacities.
- Leave 1/16" clearance (1/8" maximum) between the end of the supported joist and the header or hanger.
- Fill all round, dimple and positive angle nail holes. Capacities will vary with different nailing criteria or other support conditions.

Header Requirements

- TJI® joist headers or beams are Trus Joist products or sawn lumber (southern pine, Douglas fir or spruce-pine-fir).
- Minimum header width for top flange hangers is 3".
- Minimum header width for face mount hangers is 1¾".

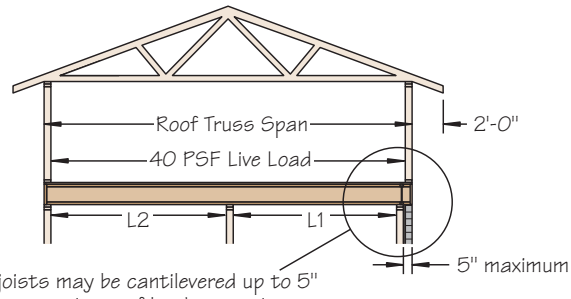
2' Cantilever



TJI® joists may be cantilevered up to 2'-0" when supporting roof load, assuming:
- simple or continuous span
- L1 ≤ L2*

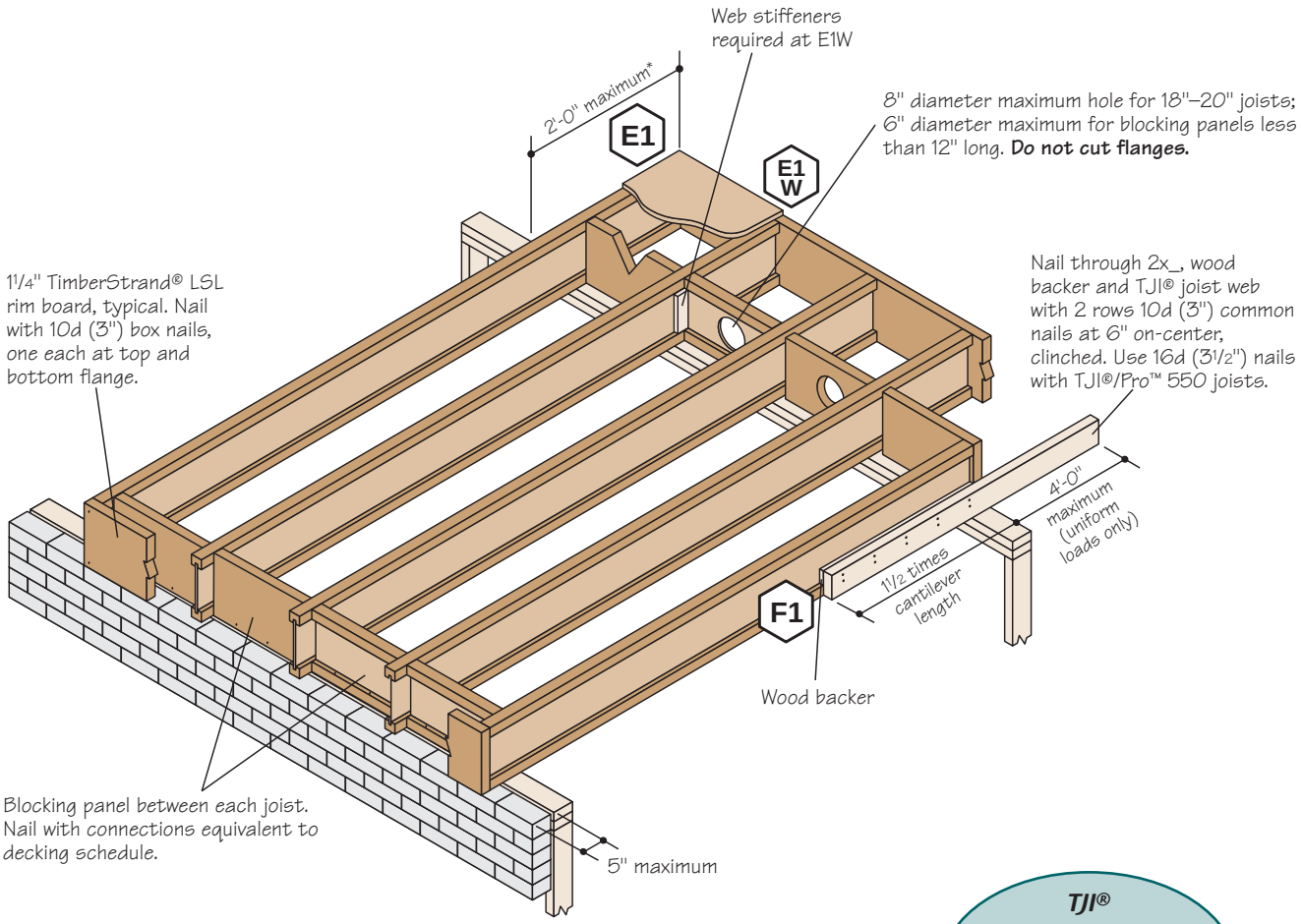
Web stiffeners may be required. See table on page 9.

Brick Ledge Cantilever



TJI® joists may be cantilevered up to 5" when supporting roof load, assuming:
- simple or continuous span
- L1 ≤ L2*

See table on page 9.

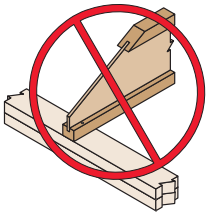


* For other conditions, contact your Trus Joist representative.

TJI® joists are intended for dry-use, non-treated applications

These Conditions Are NOT Permitted

DO NOT bevel cut joist beyond inside face of wall

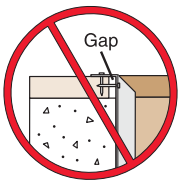


DO NOT use sawn lumber for rim board or blocking

Sawn lumber may shrink after installation

DO NOT install hanger overhanging face of plate or beam

Flush bearing plate with inside face of wall or beam



How to Use This Table

1. Identify TJI® joist.
2. Locate the ROOF TRUSS SPAN (horizontal) that meets or exceeds your condition.
3. Find ROOF TOTAL LOAD and ON-CENTER JOIST SPACING for your application.
4. Refer to LEGEND to determine whether web stiffeners are required. Also see details on page 8.

General Notes

Table is based on:

- 15 psf roof dead load.
- 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.
- Roof truss with 24" soffits.
- Designed for 2x4 and 2x6 plate widths.
- For conditions beyond the scope of this table, use TJ-Beam® or TJ-Xpert® software.

2' Maximum and Brick Ledge

Condition	18" and 20" TJI®/Pro™	Roof Truss Span	Roof Total Load: 35 PSF			45 PSF			55 PSF		
			On-Center Joist Spacing: 16"	19.2"	24"	16"	19.2"	24"	16"	19.2"	24"
2' Maximum	350	28'	0	0	0	0	0	W	0	0	X
		30'	0	0	0	0	0	W	0	0	X
		32'	0	0	0	0	0	W	0	W	X
		34'	0	0	W	0	0	X	0	W	X
		36'	0	0	W	0	0	X	0	W	X
		38'	0	0	W	0	W	X	0	X	X
		40'	0	0	W	0	W	X	W	X	X
	550	28'	0	0	0	0	0	0	0	0	0
		30'	0	0	0	0	0	0	0	0	0
		32'	0	0	0	0	0	0	0	0	0
		34'	0	0	0	0	0	0	0	0	0
		36'	0	0	0	0	0	0	0	0	0
		38'	0	0	0	0	0	0	0	0	W
		40'	0	0	0	0	0	0	0	0	W
Brick Ledge	350	28'	0	0	X	0	X	X	0	X	X
		30'	0	0	X	0	X	X	X	X	X
		32'	0	0	X	0	X	X	X	X	X
		34'	0	X	X	X	X	X	X	X	X
		36'	0	X	X	X	X	X	X	X	X
		38'	0	X	X	X	X	X	X	X	X
		40'	0	X	X	X	X	X	X	X	X
	550	28'	0	0	0	0	0	X	0	X	X
		30'	0	0	X	0	0	X	0	X	X
		32'	0	0	X	0	0	X	0	X	X
		34'	0	0	X	0	X	X	0	X	X
		36'	0	0	X	0	X	X	X	X	X
		38'	0	0	X	0	X	X	X	X	X
		40'	0	X	X	X	X	X	X	X	X

Legend

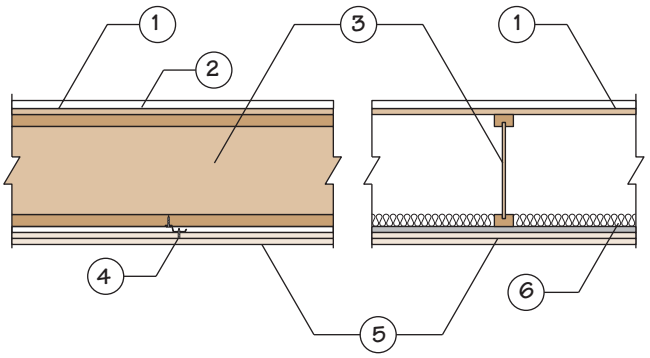
0 No web stiffener required.

W Web stiffener required each side of joist at bearing. See detail E1W.

X Will not work. Reduce spacing of joists and recheck table.

Sound Control Detail

All Joist Series



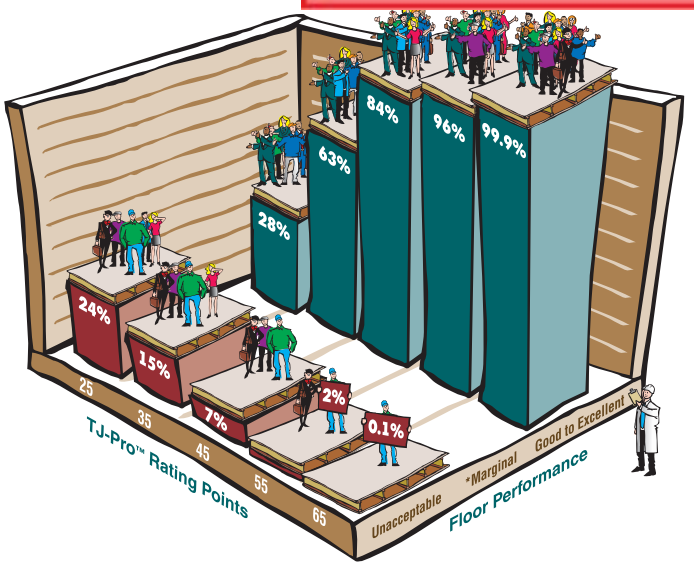
1. 48/24 tongue-and-groove span-rated sheathing ("Exposure 1")
2. 3/4" thick, Gyp-Crete® underlayment
3. TJI® joists
4. RC-1 resilient channels attached directly to joist at 16" on-center spacing
5. Two layers of 5/8" thick Type X gypsum board (1/2" Type X gypsum board adequate for carpet and pad detail)
6. 3 1/2" thick unfaced fiberglass insulation batt

Sound Test Data

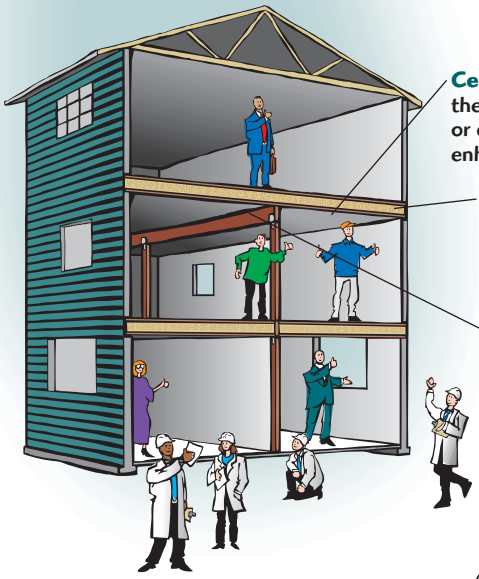
Type of Floor Covering	Without Gyp-Crete®		With Gyp-Crete®	
	STC	IIC	STC	IIC
None	54	46	58	46
Pad and Carpet	50	60	58	54
Armstrong VIOS Inlaid Sheet Vinyl	56	47	–	51
Armstrong Cambray Sheet Vinyl	–	–	–	50
Hartco Foam Backed Parquet	–	–	–	52
Tarkett Acoustiflor® Sheet Vinyl	–	51	58	54

- For additional information regarding sound ratings contact your local Trus Joist representative.

The TJ-Pro™ Rating System is a sophisticated computer model for predicting floor performance. Trus Joist offers the TJ-Pro™ Rating System in its exclusive TJ-Beam® and TJ-Xpert® software.



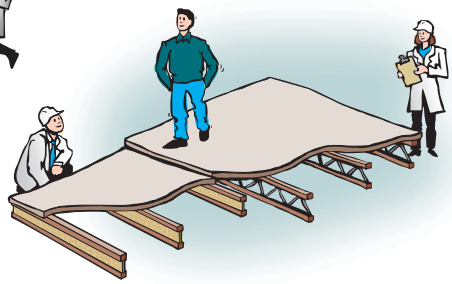
The TJ-Pro™ Rating System allows you to select not only Trus Joist products, but other components contributing to the assembly of a floor as well. Varying the components and developing relative performance ratings gives you options for enhancing the floor's performance. You also get a comparison cost value to assist you in determining the cost efficiency of your selection. This comparison cost value is based on the input cost of decking and the wood volume of floor joist in your floor assembly. This capability allows you to balance floor economics with the TJ-Pro™ Performance Value. Varying the quantifiable components can increase the Performance Value, often without significant increases in system cost. Different joist types, depth and spacing can sometimes even lower the cost while increasing the Performance Value.



Ceiling – A ceiling directly applied to the bottom edge of the floor members—or equivalent strapping—is a performance enhancement.

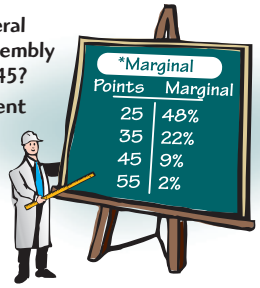
Continuity – Continuous joists over several supports generally perform better than simple spans. Care must be taken if the joists continue into another occupancy.

Beams – Generally, joists supported by beams that are free to deflect tend to feel a little less solid than joists supported by solid bearing walls.

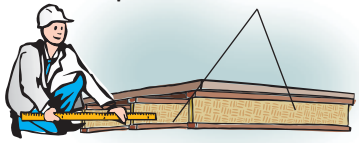


Example: How does the general public "feel" about a floor assembly with a Performance Value of 45?

- 84% find it Good to Excellent
- 9% find it Marginal
- 7% find it Unacceptable



Joist Spacing and Deck Stiffness – Reduced spacing or increased deck thickness generally improves the performance of a floor assembly.



Since the mid 1960s, Trus Joist has been involved in evaluating floor performance. Our early observations suggested that the minimum deflection criteria used by the industry (L/360 or less under live load) provided little assurance of an acceptable floor. In an effort to improve performance, we began recommending a stiffer static deflection limit of L/480 for longer-span residential floors and L/600 for longer-span commercial floors. Fundamental to this recommendation was our belief that the performance of the floor must also consider the use of the structure. Our recommended deflection criteria has resulted in a higher percentage of acceptable floors and remains a reasonable starting guideline.

It has been well-documented that historic **uniform live load deflection criteria** alone is not enough to produce consistent and predictable performance results and that **dynamic floor system response** should be a consideration.

In the early 1990s, Trus Joist began a research project to develop the desired design methodology for evaluating floor performance including consideration of dynamic response. Our objective was to combine the findings of our research and 30 years of experience into a tool that can be used to evaluate the potential for predictable floor performance.

From our research and the information gathered from almost 1,000 field and laboratory floor applications of our products we created a computer model to analyze these applications statically. The numerical results were correlated with subjective evaluations of dynamic field floor tests to develop the **TJ-Pro™ Rating System**. This evaluation methodology allows the user to select various floor assembly components and options to produce a relative rating number (Performance Value) for the floor assembly. Usually the value will be between 25 and 60. An estimate of the percentage of the population that finds each rating category acceptable can then be obtained from the chart. This new evaluation methodology from Trus Joist gives you the ability to truly "put yourself in the other person's shoes," by encouraging you to think about how others may want a floor to perform. The TJ-Pro™ Rating System is intended for typically loaded floors (i.e. not for dance halls, weight rooms, etc.).

How high a percentage is "right"? All of us in this business have an experience base to draw upon. As a specifier, you have the advantage of knowing the level of expectation to which the floor assembly will need to perform. While neither you nor Trus Joist can guarantee 100% positive results, applying this new tool with a little judgment lets you gain an unprecedented level of control over the expected performance of the floor assembly.

Floor performance is a subjective issue that is influenced by many factors. Listed below are several suggestions that may help in the design of a floor system:

- Deeper joists will reduce deflection.
- Thicker floor sheathing and/or reducing the on-center spacing of the joists will improve load sharing.
- Adhesives that permanently bond the sheathing to the joists will improve the stiffness of the floor system and will also prevent squeaks.
- Directly applied ceilings, bridging, 1x4 minimum bottom chord strapping or full-depth blocking will improve floor performance.
- Framed partition walls, ceilings and other inherent random dead loads will dampen vibrations. Non-bearing transverse partitions within the span, solidly connected to the floor, help to dampen vibrations and contribute to the perception of a solid-feeling floor assembly (not available in TJ-Xpert® software).
- Workmanship in the field is critical. Protection of construction materials from exposure to moisture, full joist bearing, adequate and level supports, proper installation of the floor sheathing and care in the fastening (nailing, adhesives, etc.) are important details of construction.
- Poured toppings can have either a positive or negative effect, depending on variables such as the type of topping and how it is connected to the deck surface.

The perception and expectation of an end user is typically the most important variable to consider in selecting the components of a floor system.

Fire-Safe Construction

Fire-safe construction and life safety are major concerns for everyone in the building materials and construction industry. The 2000 statistics on residential fire in the U.S. alone include 3,445 fire fatalities and $5.7 billion in property damage. These numbers underscore the seriousness of the issue and the need for fire-safe construction.

Over the past 30 years, prefabricated wood I-joists 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-endurance ratings. Trus Joist believes that fire-safe design should be a consideration in all structures and for all types of materials. The following information is intended to help you specify and install Trus Joist products with fire safety in mind.

Active Fire Suppression

Trus Joist supports the position that homeowners, firefighters, insurers and the community at large benefit from the use of properly installed fire sprinkler systems. Automatic residential fire sprinkler systems have an excellent record of performance and offer the best available protection to occupants and their property. Today's modern systems are inconspicuous and efficient and can be installed for less cost than the typical homeowner will spend to carpet their floors. This type of fire suppression system provides:

- Early and unsupervised fire suppression
- Reduced smoke development
- Enhanced life safety
- Reduced potential for significant property damage

Passive Fire Protection

Independent tests have proven that unprotected lightweight framing systems, whether combustible or non-combustible, suffer serious and rapid structural degradation when exposed to heat and fire. All floor framing materials—sawn lumber, wood I-joists, trusses and light gauge steel—succumb quickly to fire if not protected. In fire scenarios, a protective membrane such as gypsum ceiling board will provide additional protection to the structural framing members. Passive fire-suppression methods provide:

- Delayed fire growth
- Reduced potential for significant property damage
- Enhanced market value of the home

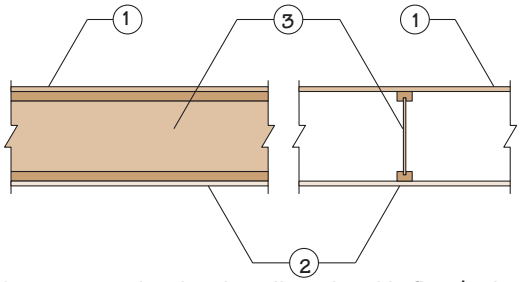
Smoke Detectors

Smoke detectors are universally recognized as the most cost-effective life-saving devices. While 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.

For more information on fire assemblies and fire-safe construction, please refer to Trus Joist's Fire Facts Guide (Reorder #5003) or visit www.trusjoist.com and www.i-joist.com.

Minimum Membrane Construction

All Joist Series



Trus Joist supports the idea that all combustible floor/ceiling and roof/ceiling assemblies in all habitable areas be protected by a minimum membrane protection consisting of or equivalent to 1/2" gypsum board

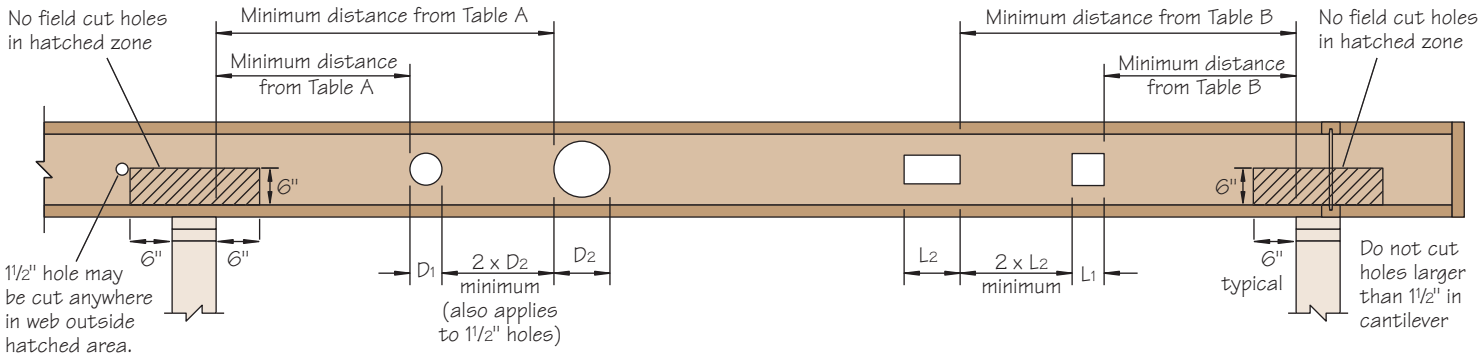
Trus Joist Suggestions

1. 48/24 tongue-and-groove span-rated sheathing ("Exposure 1")
2. Single layer 1/2" thick gypsum board
3. TJI® joists

Benefits of Minimum Membrane Construction

- Improved life safety
- Reduced potential for fire damage by slowing fire growth
- Enhanced market value of the home

Allowable Holes



How to Use These Tables

1. Locate the column that meets or exceeds the required hole size.
2. Identify the TJI® joist and depth being used.
3. Scan horizontally until you intersect the column that contains the hole size you selected. This value is the **required minimum distance** from the edge of the hole to the inside face of the nearest support.

General Notes

- Multiple holes require spacing 2 times the length of the largest hole.
- Holes may be located vertically anywhere within the web. Leave 1/8" of web minimum at top and bottom of hole.
- TJI® joists are manufactured with 1½" perforated knockouts in the web at approximately 12" on-center along the length of the joist. They do not affect hole placement.
- Distances are based on uniform loads using the maximum loads shown in this guide. For other load conditions or hole configurations use TJ-Beam® software or contact your Trus Joist representative.
- For simple span (5 foot minimum) uniformly loaded joists not requiring commercial concentrated loads, one maximum size round hole may be located at the center of the joist span **provided no other holes occur in the joist.**

Full web depth rectangular holes are also possible. Contact your Trus Joist representative for assistance.

Table A—Round Holes

Minimum distance from inside face of any support to nearest edge of hole

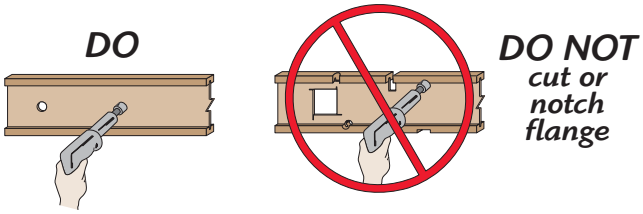
Depth	TJI®/Pro™	Round Hole Size							
		2"	4"	6"	8"	10"	12"	14¾"	16¾"
18"	350	1'-0"	1'-0"	1'-0"	1'-0"	4'-0"	7'-6"	13'-0"	
	550	1'-0"	1'-0"	1'-0"	3'-6"	6'-6"	10'-0"	15'-0"	
20"	350	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	6'-0"	10'-0"	14'-6"
	550	1'-0"	1'-0"	1'-0"	1'-0"	3'-6"	7'-0"	12'-0"	16'-0"

Table B—Square or Rectangular Holes

Minimum distance from inside face of any support to nearest edge of hole

Depth	TJI®/Pro™	Square or Rectangular Hole Size							
		2"	4"	6"	8"	10"	12"	14¾"	16¾"
18"	350	1'-0"	1'-0"	3'-0"	8'-0"	13'-0"	15'-0"	17'-6"	
	550	1'-0"	2'-0"	6'-6"	10'-6"	14'-6"	16'-0"	18'-0"	
20"	350	1'-0"	1'-0"	1'-0"	6'-0"	11'-6"	15'-0"	17'-6"	19'-6"
	550	1'-0"	1'-0"	4'-0"	9'-0"	14'-0"	17'-0"	18'-6"	19'-6"

Rectangular holes based on measurement of longest side.



Trus Joist®
A Weyerhaeuser Business

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P.O. Box 60 ♦ Boise, ID 83707 ♦ (208) 364-1200

January 2003 NW/5M
If this guide is more than one year old, contact your dealer or Trus Joist rep.

Reorder 2042