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.

TJI®/Pro™ 120TS 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

TJI® Joists

The Silent Floor® System is the benchmark of quality. When integrated into the frame of a house, it significantly increases the value and structural quality of the home.

Trus Joist's Silent Floor® System continues to set the standard for engineered solutions to residential framing challenges. At the heart of the system is the TJI® joist, which was created and marketed by Trus Joist more than 25 years ago as the first commercially available wood "I" joist. Over the past quarter century, we have continued to test, develop and improve our product line with more than 400 refinements in order to better serve our customers, while more efficiently utilizing forest resources.

A healthy future for the building industry depends on sustaining a predictable supply of wood fiber—fiber Trus Joist uses to develop structural building products. In the face of a diminishing supply of quality structural lumber and changing forest resources, Trus Joist is dedicated to giving you top quality products that optimize wood fiber utilization.

Our goal is to provide you with the best possible products today, through advanced manufacturing technology and resource utilization that also assure you the best possible products tomorrow.

The residential products in this brochure are primarily intended for use in single and multi-family dwellings. These products are readily available through our nationwide network of distributors and dealers.

For commercial applications such as retail stores, office buildings, schools, restaurants, hotels, nursing homes, etc., please refer to the Commercial section of the 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 products, please call 1-800-628-3997.

TABLE OF CONTENTS

Length and strength add a whole new dimension to structural systems. Long length TJI® joists make for faster, easier installation with no length price premium.

CODE EVALUATIONS:
NER-200
FHA/HUD 689

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 and 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.*

Specify Trus Joist's FrameWorks® Building System

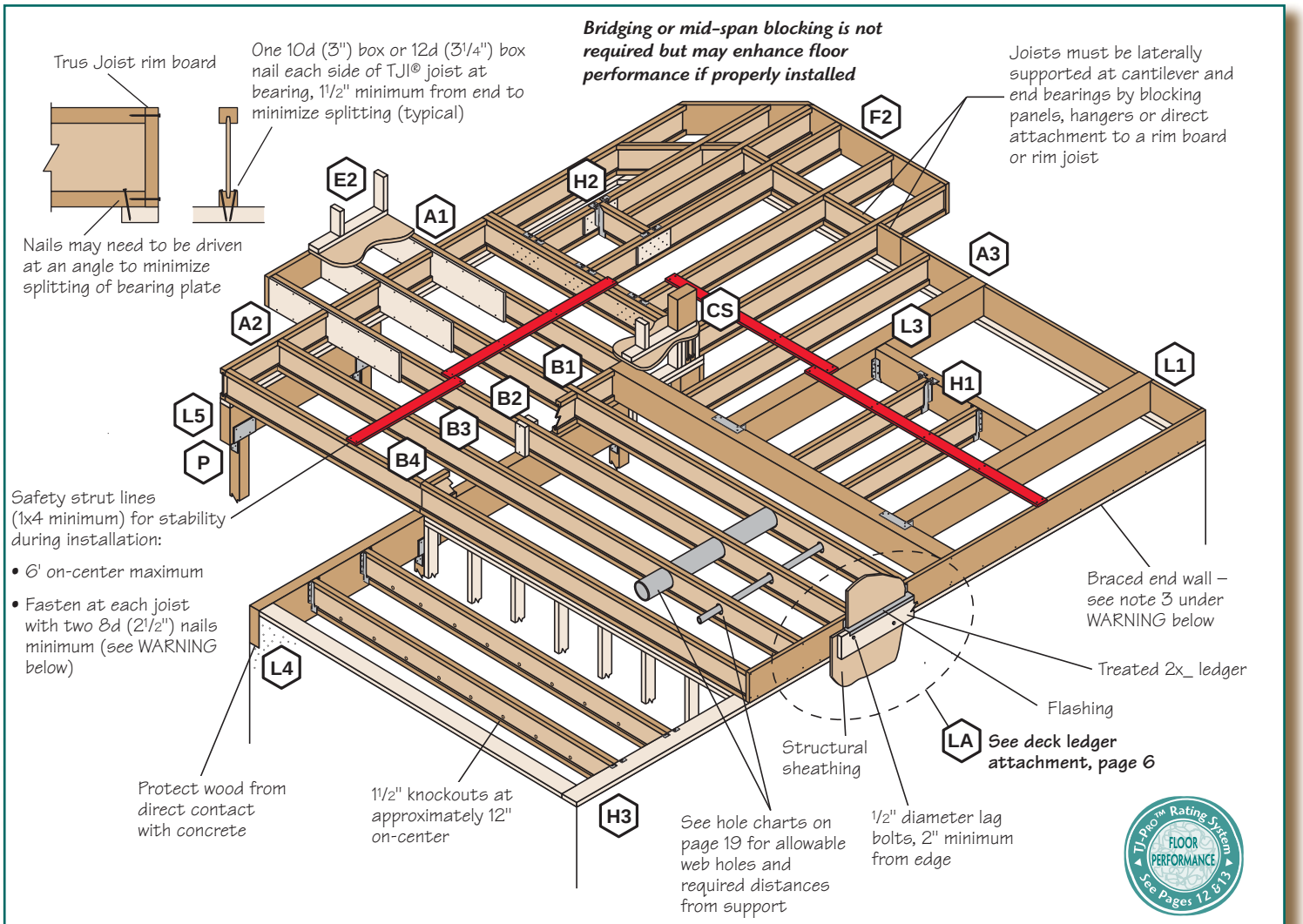
The FrameWorks® Building System is innovative technology designed to optimize the limited forest resource. Combine this core engineering strength with unmatched service and the best product guarantee in the business and you have a company—and products—that you can depend on.

If you have questions, are planning an unusual residential installation, need information on multi-family or commercial applications, or just want to talk about the future of the industry, call the Trus Joist representative nearest you.

1-800-628-3997

TJ-Pro™ Rating System
FLOOR PERFORMANCE
See Pages 12 & 13

Typical Silent Floor® System

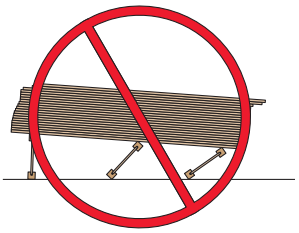


WARNING

Joists are unstable until braced laterally

BRACING INCLUDES:

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



DO NOT allow workers to walk on joists until braced. INJURY MAY RESULT. See notes 1, 2 & 3 below.

DO NOT stack building materials on unsheathed joists. Stack only over beams or walls. See note 4 below.

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 strut 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 and 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 strut lines on both the top and bottom flanges.
6. The flanges must remain straight within a tolerance of ½" from the true alignment.

How to Use These Tables

1. Determine the live load deflection criteria (MINIMUM CRITERIA PER CODE – L/360 or IMPROVED PERFORMANCE SYSTEM – L/480) and locate the appropriate table.
2. Identify the loading condition (40 PSF LIVE LOAD/10 PSF DEAD LOAD or 40 PSF LIVE LOAD/20 PSF DEAD LOAD) and move to the appropriate section of the table.
3. Select the on-center spacing you prefer.
4. Scan down the column until you meet or exceed the span of your application.
5. Scan to the left to locate the required TJI®/Pro™ 120TS joist depth.

Minimum Criteria Per Code

L/360 Live Load Deflection

	TJI®/Pro™ 120TS	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
40 PSF Live Load 10 PSF Dead Load	9 1/2"	18'-0"	16'-6"	15'-7"	14'-6"
	11 7/8"	21'-6"	19'-8"	18'-7"	16'-9"
	14"	24'-5"	22'-4"	20'-9"	18'-7"
40 PSF Live Load 20 PSF Dead Load	9 1/2"	18'-0"	16'-2"	14'-9"	13'-2"
	11 7/8"	21'-6"	18'-9"	17'-1"	15'-3"
	14"	24'-0"	20'-9"	18'-11"	16'-5"

MAXIMUM ALLOWABLE SPANS PER CODE

TJ-Pro™ Rating System FLOOR PERFORMANCE See Pages 12 & 13

Improved Performance System

L/480 Live Load Deflection

	TJI®/Pro™ 120TS	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
40 PSF Live Load 10 PSF Dead Load	9 1/2"	16'-4"	14'-11"	14'-1"	13'-1"
	11 7/8"	19'-5"	17'-9"	16'-9"	15'-7"
	14"	22'-1"	20'-2"	19'-0"	17'-8"
40 PSF Live Load 20 PSF Dead Load	9 1/2"	16'-4"	14'-11"	14'-1"	13'-1"
	11 7/8"	19'-5"	17'-9"	16'-9"	15'-3"
	14"	22'-1"	20'-2"	18'-11"	16'-5"

• Long term deflection under dead load which includes the effect of creep, common to all wood members, has not been considered for any of the above applications. Shaded spans reflect initial dead load deflection exceeding 0.33", which may be unacceptable. For additional information, refer to our TJ-Beam® or TJ-Xpert® software or contact your Trus Joist representative.

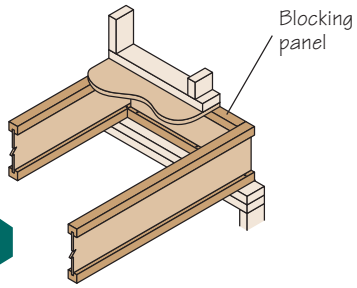
General Notes

Tables are based on:

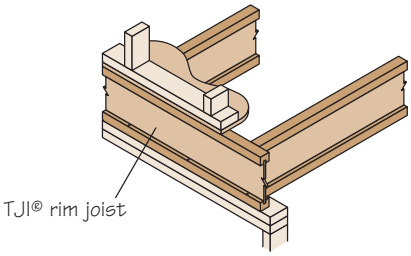
- Assumed composite action with a single layer of appropriate span-rated glue-nailed wood sheathing for deflection only (spans shall be reduced 5" when sheathing panels are nailed only).
- Uniformly loaded joists.
- A code-allowed increase for repetitive member use has been included.
- Spans shown are clear distance between supports.
- More restrictive of simple or continuous span.
- For loading conditions not shown, refer to load table on page 11.

Web Stiffener Requirements

- Required if the sides of the hanger do not laterally support at least 3/8" of the TJI® joist top flange or per footnotes on pages 20 and 21.
- **End Bearings:** Not required.
- **Intermediate Bearings:** Not required.

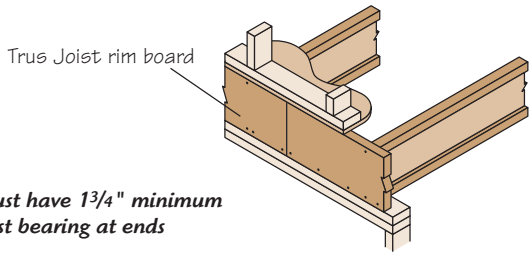


A1



Must have 1¾" minimum joist bearing at ends

A2

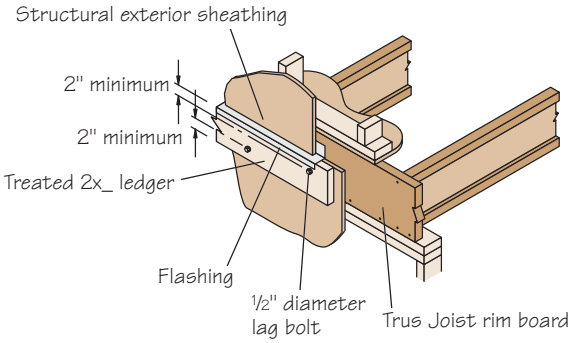


For information on lateral load capacities, refer to current TimberStrand® LSL or TJ-Strand® rim board literature

Must have 1¾" minimum joist bearing at ends

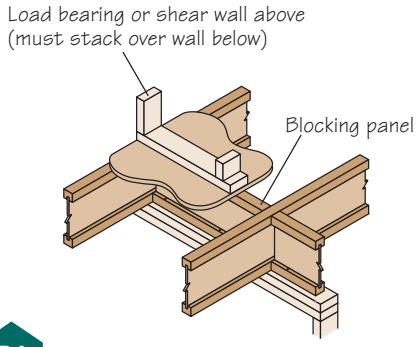
A3

Exterior Deck Attachment

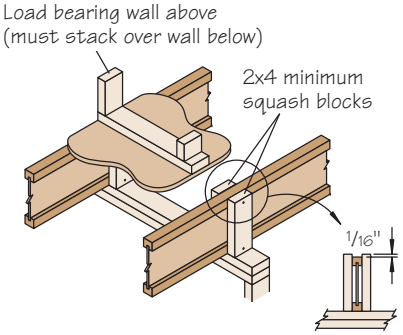


Allowable load is 325 lbs per ½" diameter lag bolt

LA



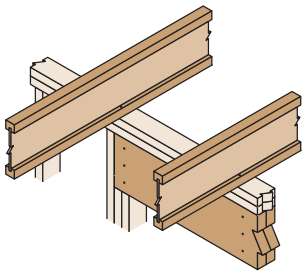
B1



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

B2

Intermediate Bearing – No Load Bearing Wall Above



B3

General Notes

Minimum Bearing Length

- **At joist ends:** 1¾".
- **At intermediate supports:** 3½".

Blocking Panels, Rim Boards or Rim Joists

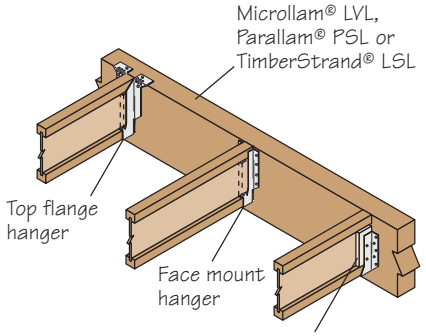
- Check vertical load transfer at bearings.
  Capacities of rim details shown are as follows:
  TJI® blocking. . . . . 2000 plf
  TJI® rim joist . . . . . 2000 plf
  TimberStrand® LSL – 1¼" . . . . . 4250 plf
  TJ-Strand® rim board – 1¼" . . . . . 4250 plf
  Loads shown may not be increased for duration of load.
- Bracing complying with the code shall be carried to the foundation.

Nailing Requirements

- **TJI® joists at bearings:** Two 10d (3") box or 12d (3¼") box nails (1 each side), 1½" 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 (3½") box nails at 12" on-center.
  Shear transfer: Connections equivalent to decking nail schedule.
- **Rim board, rim joist or closure to TJI® joist:**
  1¾" width or less: Two 10d (3") box nails, one each at top and bottom flange.
  TJI®/Pro™ 120TS rim joist: Two 10d (3") box nails, one each at top and bottom flange.
- **2x4 minimum squash blocks:** Two 10d (3") box nails, one each at top and bottom flange.

Web Stiffener Requirements

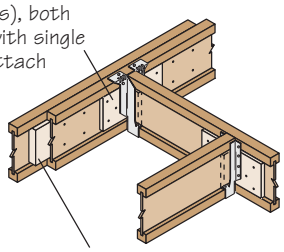
- Required if the sides of the hanger do not laterally support at least ⅜" of the TJI® joist top flange or per footnotes on pages 20 and 21.



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

H1

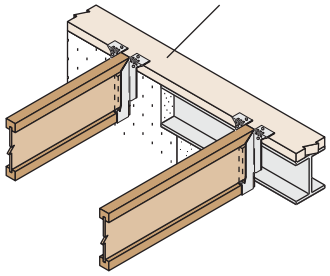
Backer block: Install tight to top flange (tight to bottom flange with face mount hangers), both sides of web with single TJI® joists. Attach with ten 10d (3") box nails, clinched when possible.



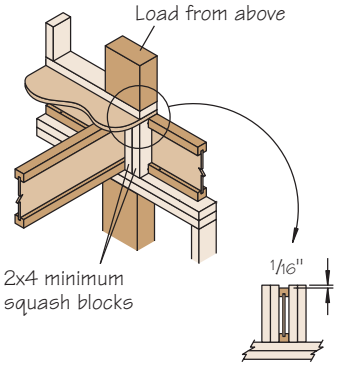
Filler block: Nail with ten 10d (3") box nails, clinched

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



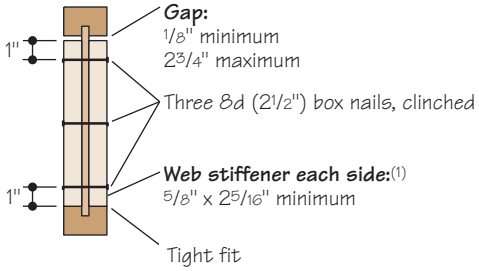
H3



CS ***Use 2x4 minimum squash blocks to transfer load from above to bearing plate below***

Web Stiffener Attachment

TJI®/Pro™ 120TS Joists

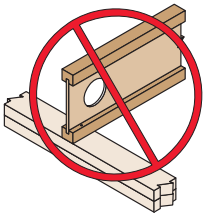


W ***(1) Web stiffener material shall be sheathing meeting the requirements of PS 1 or PS 2 with face grain vertical***

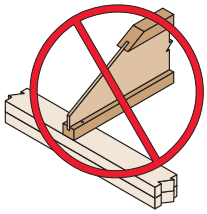
These Conditions are NOT Permitted

DO NOT cut holes too close to support

Refer to hole charts on page 19 for minimum distance from support



DO NOT bevel cut joist beyond inside face of wall

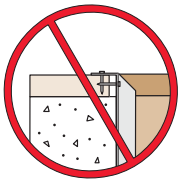


DO NOT use sawn lumber for rim board or blocking

Sawn lumber may shrink after installation

DO NOT install hanger over-hanging face of plate or beam

Flush bearing plate with inside face of wall or beam



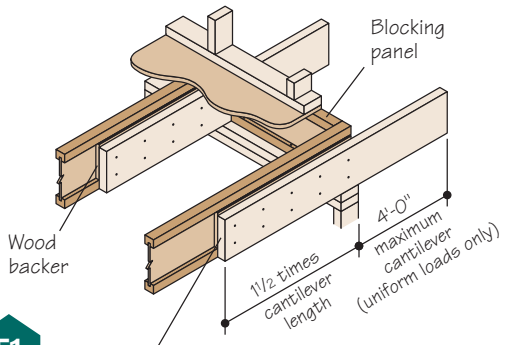
Refer to Page 6 for General Notes for Details

Filler and Backer Block Sizes

TJI®/Pro™ Depth	120TS	
	9 1/2" or 11 7/8"	14"
Filler Block* (Detail H2)	2x6	2x8
Cantilever Filler (Detail E4)	2x6, 4'-0" long	2x10, 6'-0" long
Backer Block* (Detail F1 or H2)	5/8" or 3/4"	5/8" or 3/4"

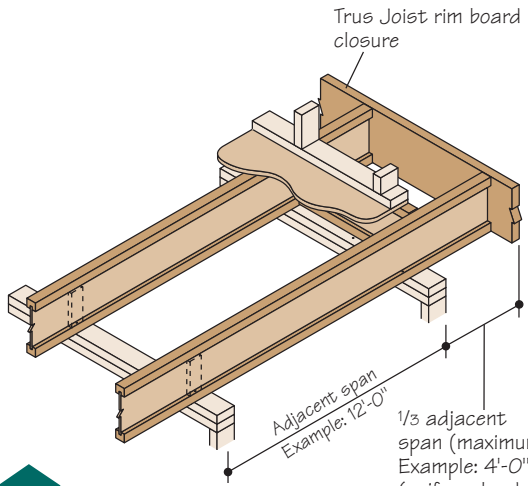
* If necessary, increase filler and backer block height for face mount hangers. Maintain 1/8" gap at top of joist; see detail W. Filler and backer block dimensions should accommodate required nailing without splitting.

Cantilevers Not Supporting Bearing Walls



F1

2x__ nailed to the side of the TJI® joist with wood backer. Nail through the TJI® joist web and backer into the 2x__ with 2 rows 10d (3") common nails at 6" on-center and clinch.

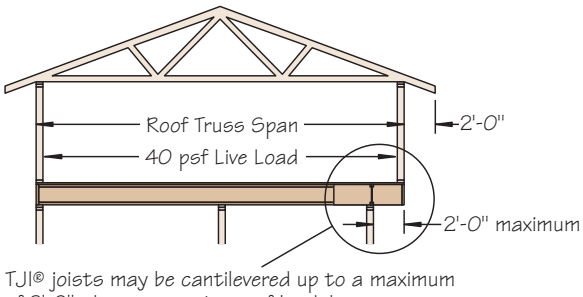


F2

TJI® joists are permitted to be cantilevered up to 1/3 the adjacent span if not supporting concentrated loads on the cantilever. Cantilevers exceeding 4 feet may require special consideration. Refer to our TJ-Beam® or TJ-Xpert® software or contact your Trus Joist representative for assistance.

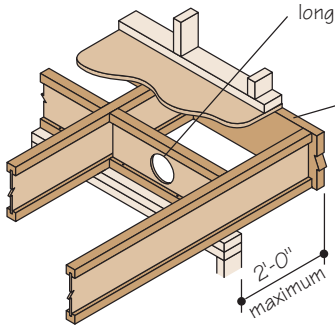
TJI® joists are intended for dry-use, non-treated applications

Cantilevers Supporting Bearing Walls



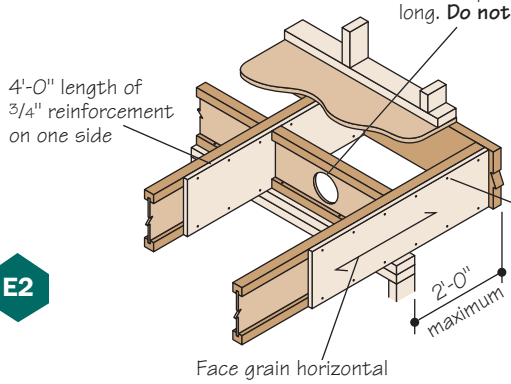
TJI® joists may be cantilevered up to a maximum of 2'-0" when supporting roof load, but may require reinforcement. **Consult table on page 9 to determine required reinforcement.** See details below for methods of reinforcement.

8" diameter maximum hole may be cut in each blocking panel for 11⅞"–14" joists; 6" diameter maximum for 9½" joists or for blocking panels less than 12" long. **Do not cut flanges.**



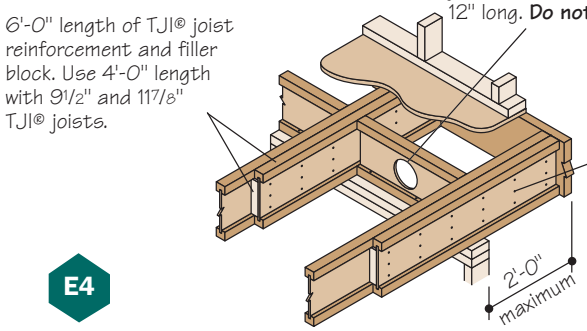
E1

8" diameter maximum hole may be cut in each blocking panel for 11⅞"–14" joists; 6" diameter maximum for 9½" joists or for blocking panels less than 12" long. **Do not cut flanges.**



E2

8" diameter maximum hole may be cut in each blocking panel for 11⅞"–14" joists; 6" diameter maximum for 9½" joists or for blocking panels less than 12" long. **Do not cut flanges.**



E4

How to Use This Table

1. Use the first column to identify the TJI®/Pro™ 120TS joist depth used in your application.
2. Locate the ROOF TRUSS SPAN (horizontal measurement) that meets or exceeds your condition.
3. Scan to the right until you intersect the column that contains the ROOF TOTAL LOAD and ON-CENTER JOIST SPACING for your application.
4. Note the contents of the cell and use the LEGEND at right to determine the reinforcement (if any) required.

Legend

0 No reinforcement required.

1 3/4" x 48" reinforcement required on one side of joist (see detail E2) or double the joists (see detail E4).

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

TJI®/Pro™ 120TS	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"
9 1/2"	24'	0	0	0	0	0	X	0	1	X
	26'	0	0	1	0	1	X	0	X	X
	28'	0	0	1	0	1	X	1	X	X
	30'	0	0	1	0	1	X	1	X	X
	32'	0	0	X	0	X	X	X	X	X
	34'	0	1	X	1	X	X	X	X	X
	36'	0	1	X	1	X	X	X	X	X
11 7/8"	26'	0	0	0	0	0	0	0	0	1
	28'	0	0	0	0	0	1	0	0	X
	30'	0	0	0	0	0	1	0	1	X
	32'	0	0	0	0	0	1	0	1	X
	34'	0	0	0	0	0	X	0	1	X
	36'	0	0	1	0	1	X	1	X	X
	38'	0	0	1	0	1	X	1	X	X
14"	26'	0	0	0	0	0	1	0	0	1
	28'	0	0	0	0	0	1	0	1	1
	30'	0	0	0	0	0	1	0	1	1
	32'	0	0	0	0	0	1	0	1	1
	34'	0	0	1	0	1	1	1	1	1
	36'	0	0	1	0	1	1	1	1	X
	38'	0	0	1	0	1	1	1	1	X
	40'	0	0	1	0	1	1	1	1	X

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.
- TimberStrand® LSL or spruce-pine-fir bearing plate or equivalent.
- Roof truss with 24" soffits.
- 3/4" reinforcement refers to 3/4" "Exposure 1" plywood or other 3/4" "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. Minimum wall plate width is 3 1/2".
- For conditions beyond the scope of this table, use our TJ-Beam® or TJ-Xpert® software or contact your Trus Joist representative for assistance.

Cantilever Details and Table—Brick Ledge

Legacy Literature
See Note on Front Cover

How to Use This Table

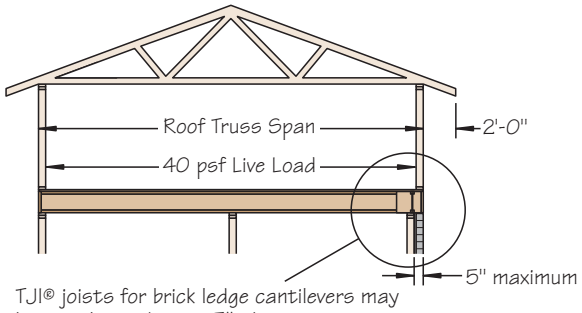
1. Use the first column to identify the TJI®/Pro™ 120TS joist depth used in your application.
2. Locate the ROOF TRUSS SPAN (horizontal measurement) that meets or exceeds your condition.
3. Scan to the right until you intersect the column that contains the ROOF TOTAL LOAD and ON-CENTER JOIST SPACING for your application.
4. Note the contents of the cell and use the LEGEND below to determine the reinforcement (if any) required.

Legend

0 No reinforcement required.

1 3/4" x 12" reinforcement required on one side of joist. See detail E5/E7.

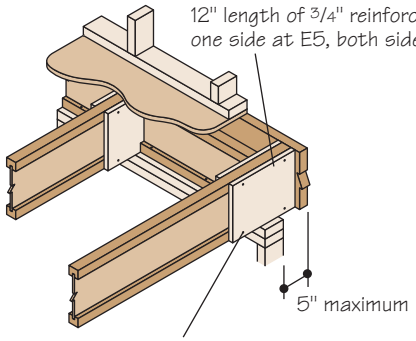
2 3/4" x 12" reinforcement required on both sides of joist. See detail E6/E8.



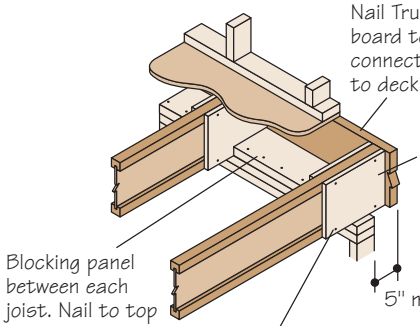
TJI® joists for brick ledge cantilevers may be cantilevered up to 5" when supporting roof load, but may require reinforcement. **Consult table to determine required reinforcement.** See details E5 and E6 below for methods of reinforcement.

TJ-Pro™ Rating System FLOOR PERFORMANCE See Pages 12 & 13

TJI®/Pro™ 120TS	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"
9½"	24'	0	0	0	0	0	0	0	0	1
	26'	0	0	0	0	0	1	0	1	1
	28'	0	0	0	0	0	1	0	1	1
	30'	0	0	0	0	0	1	0	1	1
	32'	0	0	1	0	1	1	1	1	1
	34'	0	0	1	0	1	1	1	1	2
	36'	0	0	1	0	1	1	1	1	2
11⅞"	26'	0	0	0	0	0	0	0	0	1
	28'	0	0	0	0	0	0	0	0	1
	30'	0	0	0	0	0	0	0	0	1
	32'	0	0	0	0	0	1	0	0	1
	34'	0	0	0	0	0	1	0	1	1
	36'	0	0	0	0	0	1	0	1	1
	38'	0	0	0	0	0	1	0	1	1
14"	26'	0	0	0	0	0	0	0	0	0
	28'	0	0	0	0	0	0	0	0	1
	30'	0	0	0	0	0	0	0	0	1
	32'	0	0	0	0	0	0	0	0	1
	34'	0	0	0	0	0	1	0	0	1
	36'	0	0	0	0	0	1	0	1	1
	38'	0	0	0	0	0	1	0	1	1
	40'	0	0	0	0	0	1	0	1	1



E5 E6



E7 E8

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.
- TimberStrand® LSL or spruce-pine-fir bearing plate or equivalent.
- Roof truss with 24" soffits.
- 3/4" reinforcement refers to 3/4" "Exposure 1" plywood or other 3/4" "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. Minimum wall plate width is 3½".
- For conditions beyond the scope of this table, use our TJ-Beam® or TJ-Xpert® software or contact your Trus Joist representative for assistance.

How to Use This Table

1. Determine the total load and live load on the joist in pounds per lineal foot (plf).
2. Locate under JOIST CLEAR SPAN a span that meets or exceeds the required joist span.
3. Scan to the right until you find a cell where ***both*** the maximum TOTAL LOAD value and the maximum LIVE LOAD value meet or exceed the required loads. In cells where LIVE LOAD is not listed, TOTAL LOAD will control.
4. The depth of the TJI®/Pro™ 120TS joist is shown at the top of the column in which the cell is located.

TJ-Pro™ Rating System FLOOR PERFORMANCE See Pages 12 & 13

Joist Clear Span	TJI®/Pro™ 120TS					
	9 1/2"		11 7/8"		14"	
	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load
6'		322		322		323
8'	229	243		243		244
10'	128	195		195		195
12'	78	139	130	163		163
14'	50	101	86	137	125	140
16'	34	69	59	105	87	123
18'	24	49	42	83	62	102
20'	18	36	31	63	46	83
22'		27	23	47	35	69
24'		21	18	37	28	55
26'				29	22	44
28'				23		35
30'				19		29

General Notes

Table is based on:

- Uniformly loaded joists.
- Values shown assume 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 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.

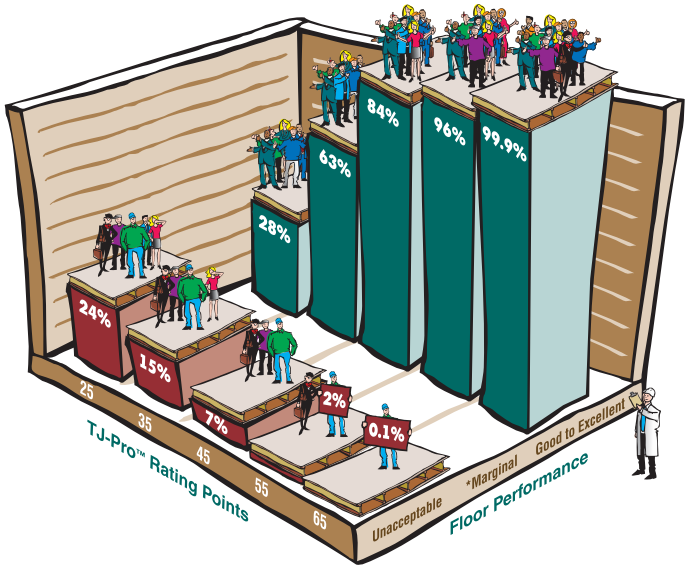
Web Stiffener Requirements

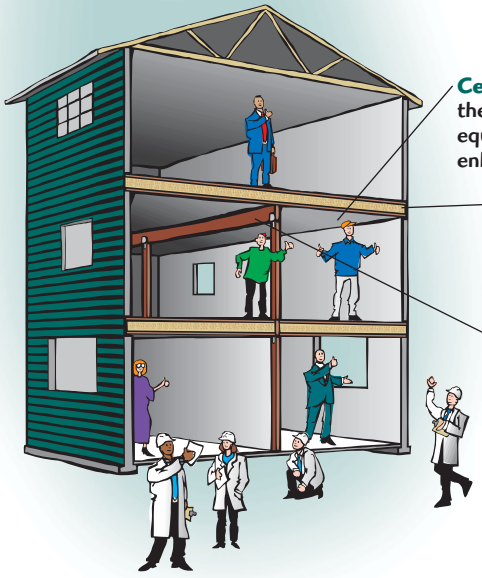
- Required if the sides of the hanger do not laterally support at least 3/8" of the TJI® joist top flange or per footnotes on pages 20 and 21.

What the TJ-Pro™ Rating System Can Do For You

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 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, depths and spacings can sometimes even lower the cost while increasing the Performance Value.





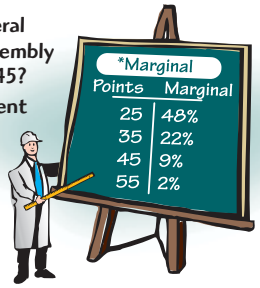
Ceiling – A ceiling directly applied to the bottom edge of floor members—or equivalent strapping—is a performance enhancement.

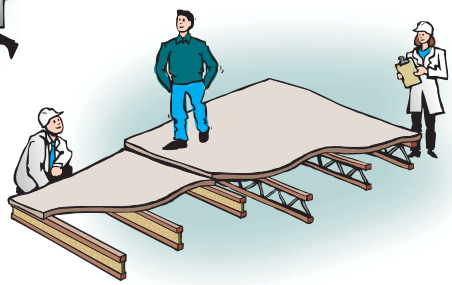
Continuity – Continuous joists over several supports generally perform better than simple spans. Care must be taken if the joists continue into another occupancy.

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.

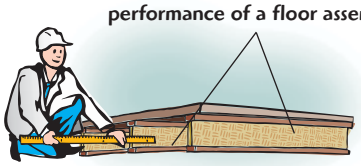
Example: How does the general public "feel" about a floor assembly with a Performance Value of 45?

- 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 close to 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.

A Word About Floor Performance

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 to 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 when selecting the components in a floor system.

Fire-Safe Construction in the Home

Fire-safe construction and life safety are major concerns for everyone in the building materials and construction industry. The 1999 statistics on residential fire in the U.S. alone include 2,920 fire fatalities and $5.1 billion in property damage. While these numbers are an improvement over the past two decades, they still underscore the seriousness of the issue and the need for fire-safe construction.

Trus Joist believes that fire-safe design should be a consideration in all structures and for all types of construction. As the world's leading producer of prefabricated wood I-joists, we want to ensure that the specifier has all of the necessary design information relative to structural properties, floor performance attributes, and fire and sound characteristics to facilitate proper specification and installation.

Wood I-joist products are increasingly becoming the framing material of choice because of superior structural performance, dimensional stability and efficient use of wood fiber. Wood I-joist products have a proven, in-service track record of safe, reliable performance over the past 30 years and have been installed in over two million homes in North America alone. While field performance related to use of the wood I-joists has been excellent, their lighter weight has led some to question their performance in fire conditions. Independent testing confirms that all unprotected lightweight floor systems, including sawn lumber, I-joists, trusses, steel or concrete, are prone to rapid deterioration when directly exposed to fire.

Typically, building codes do not require fire protection for one- or two-family dwellings. Trus Joist encourages the designer, builder and owner to consider fire safety in the design of the structure, regardless of the material selected. Recent advances in fire-rated gypsum board products and economical fire detection and suppression systems are available to provide improvements to the fire performance of any material or system.

Suppression – Automatic Fire Sprinklers

As a member of Operation Life Safety (OLS), Trus Joist supports the position that homeowners, firefighters, insurers and the community at large all benefit from the use of a properly installed fire sprinkler system. Automatic residential fire sprinkler systems offer the best protection to both occupants and their property. Today's modern sprinkler systems are sleek and efficient and can be installed for less cost than the typical homeowner will spend to carpet their floors.

Protection – Compartmentation

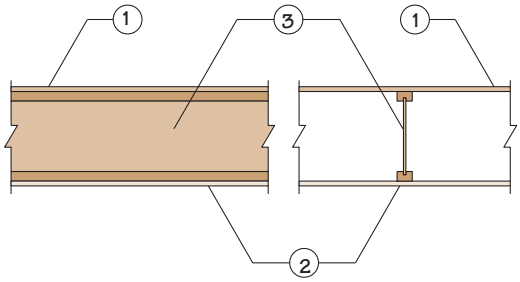
Independent tests have proven that unprotected lightweight framing systems, either combustible or noncombustible, suffer serious and rapid structural degradation when exposed to heat and fire. All floor framing materials—sawn lumber, wood I-joists, trusses or light gauge steel—will succumb quickly to fire if not protected. Trus Joist recommends that a minimum protective membrane of a 1/2" single layer of gypsum wallboard be installed in all livable spaces.

Detection – Smoke Detection Devices

Smoke detectors are universally recognized as the most cost-effective devices that save lives. While these devices do not provide any form of 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.

Minimum Membrane Construction

All Joist Series



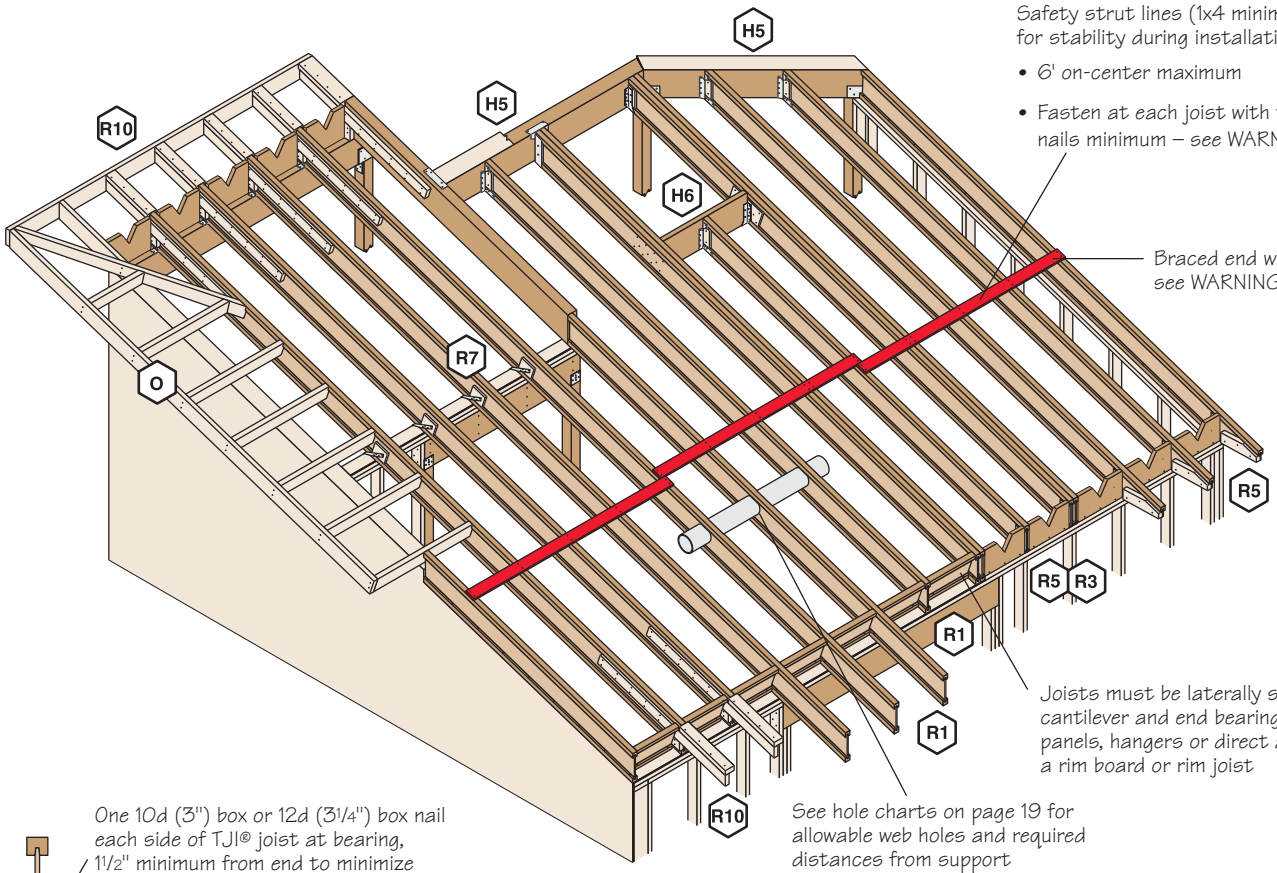
Trus Joist supports the idea that all combustible floor/ceiling and roof/ceiling assemblies in all habitable areas be protected by a minimum membrane protection consisting of or equivalent to 1/2" gypsum board

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



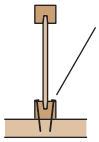
Safety strut lines (1x4 minimum) for stability during installation:

- 6' on-center maximum
- Fasten at each joist with two 8d (2½") nails minimum – see WARNING below

Braced end wall – see WARNING below

Joists must be laterally supported at cantilever and end bearings by blocking panels, hangers or direct attachment to a rim board or rim joist

See hole charts on page 19 for allowable web holes and required distances from support

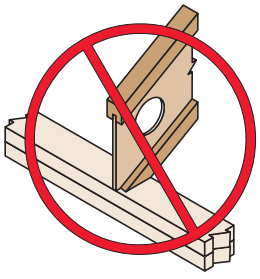


One 10d (3") box or 12d (3¼") box nail each side of TJI® joist at bearing, 1½" minimum from end to minimize splitting. Supplemental connections to the bearing plate may be required for slopes exceeding 4" per foot to resist sliding forces (typical).

WARNING
Unbraced joists are unstable. See complete warning on page 4.

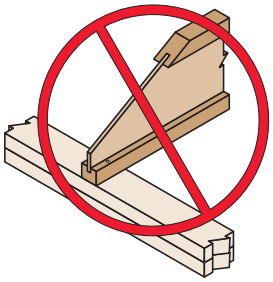
These Conditions Are NOT Permitted

DO NOT cut holes too close to support

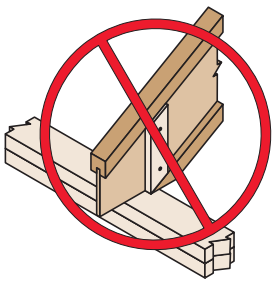


Refer to hole charts on page 19 for minimum distance from support

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 17.

How to Use This Table

1. Determine the roof loading (live load, dead load and load duration factor) and find the appropriate section of the table.
2. If your slope is 6"/12" or less use the LOW slope column. If your slope is greater than 6"/12" through 12"/12" use the HIGH slope column.
3. Move down in the column until you equal or exceed the horizontal span of your application.
4. Scan to the left to identify the required TJI®/Pro™ 120TS joist depth and on-center spacing.

O.C. Spacing	TJI®/Pro™ 120TS	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"	19'-4"	17'-2"	18'-5"	16'-4"	18'-6"	16'-7"	17'-9"	16'-0"	16'-7"	15'-0"	15'-8"	14'-3"
	11⅞"	23'-3"	20'-9"	22'-2"	19'-8"	22'-3"	19'-11"	21'-5"	19'-3"	20'-0"	18'-1"	18'-11"	17'-2"
	14"	26'-8"	23'-9"	25'-5"	22'-6"	25'-6"	22'-10"	24'-6"	22'-1"	22'-11"	20'-9"	21'-1"	19'-8"
19.2"	9½"	18'-1"	16'-2"	17'-3"	15'-4"	17'-4"	15'-6"	16'-8"	15'-0"	15'-7"	14'-1"	14'-9"	13'-5"
	11⅞"	21'-10"	19'-6"	20'-10"	18'-6"	20'-11"	18'-9"	20'-1"	18'-1"	18'-10"	17'-0"	17'-5"	16'-2"
	14"	25'-0"	22'-4"	23'-10"	21'-2"	23'-11"	21'-6"	23'-0"	20'-9"	20'-11"	19'-6"	19'-3"	18'-6"
24"	9½"	16'-9"	15'-0"	16'-0"	14'-2"	16'-1"	14'-5"	15'-5"	13'-11"	14'-5"	13'-1"	13'-5"	12'-5"
	11⅞"	20'-3"	18'-1"	19'-3"	17'-1"	19'-4"	17'-4"	18'-7"	16'-9"	16'-10"	15'-9"	15'-6"	14'-11"
	14"	23'-2"	20'-8"	22'-1"	19'-7"	21'-10"	19'-11"	20'-7"	19'-2"	18'-8"	18'-0"	17'-3"	16'-8"

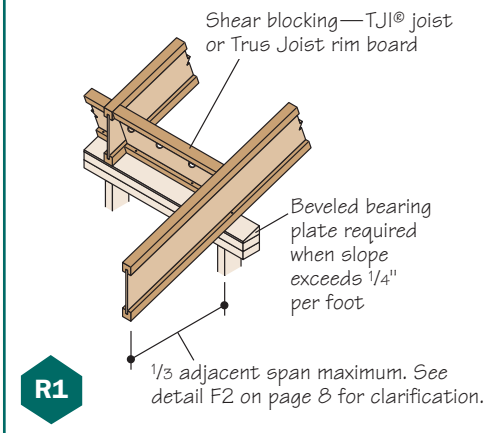
General Notes

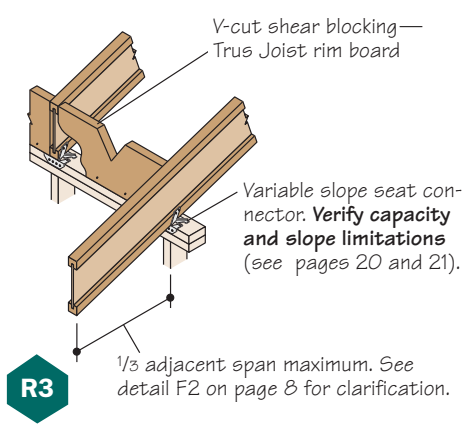
Table is based on:

- Uniformly loaded joists.
- Minimum roof surface slope of ¼" in 12".
- Total load limits joist deflection to L/180.
- Live load is based on joist deflection of L/240.
- Horizontal clear distance between supports.
- Support beam or wall at high end is required (ridge board applications do not provide adequate support).
- More restrictive of simple or continuous span.
- A code-allowed increase for repetitive member use has been included.

Web Stiffener Requirements

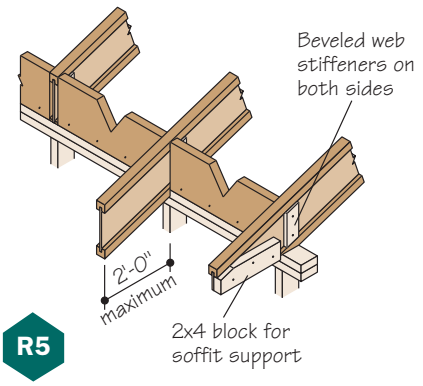
- Spans shown assume no web stiffeners at intermediate bearings.
- Required if the sides of the hanger do not laterally support at least ⅜" of the TJI® joist top flange or per footnotes on pages 20 and 21.
- Required at all sloped hanger and birdsmouth cut locations.





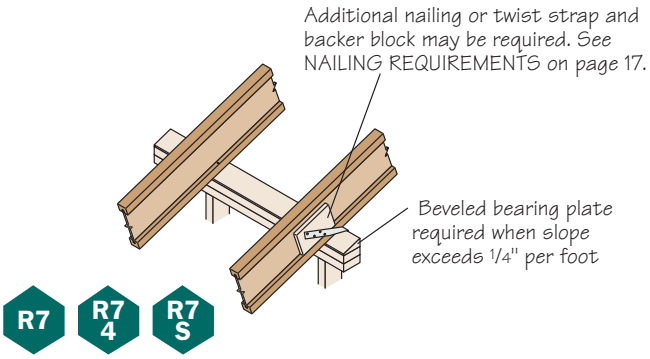
Birdsmouth Cut

Allowed at low end of joist only



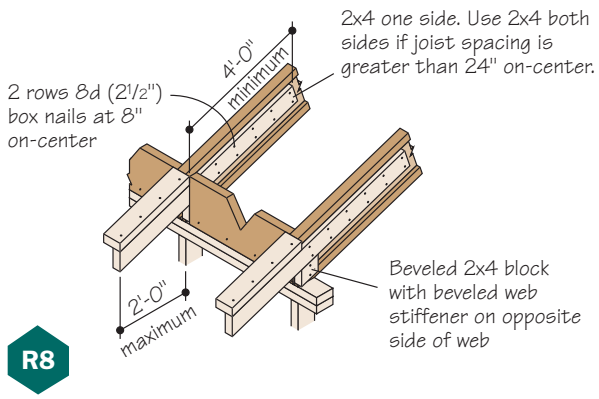
Intermediate Bearing

Blocking panels or shear blocking are optional for joist stability at intermediate supports



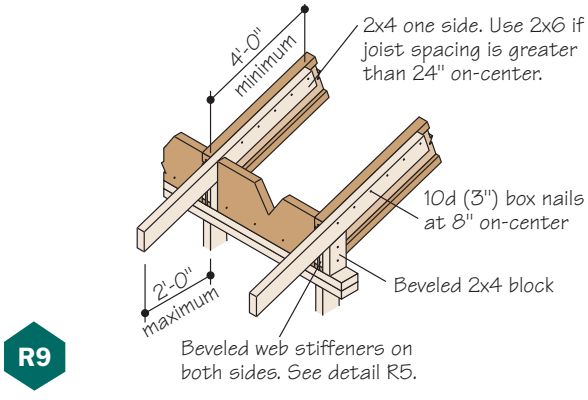
Birdsmouth Cut

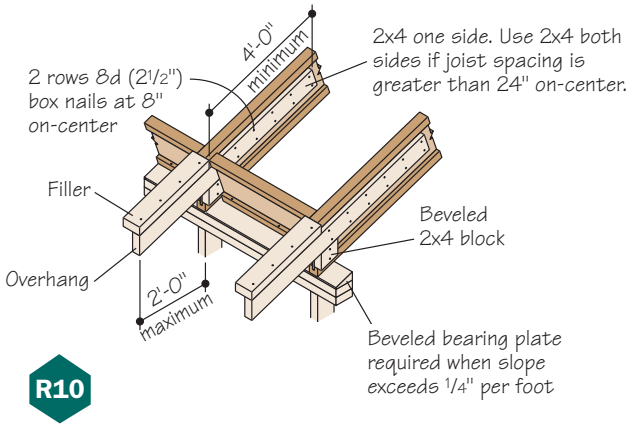
Allowed at low end of joist only



Birdsmouth Cut

Allowed at low end of joist only





General Notes

Minimum Bearing Length

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

Slope/Bevel Plate Criteria

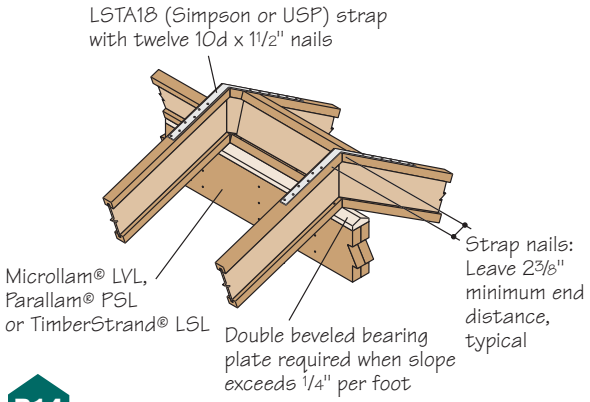
- Unless otherwise noted, all details are valid to maximum 12" per foot slope.
- Supplemental connections to the bearing plate may be required for slopes exceeding 4" per foot to resist sliding forces.
- **Wood bearing surfaces:** Sloped bearing surface required when slope exceeds 1/4" per foot. This can be accomplished by using:
  - Beveled bearing plate.
  - Variable slope seat connector (verify connector capacity, see pages 20 and 21).
  - Birdsmouth cut (see detail BC). **Allowed at low end of joist only.**
- **Hangers:** Sloped seats and beveled web stiffeners required when slope exceeds 1/2" per foot.

Lateral Support to Prevent Joist Rollover

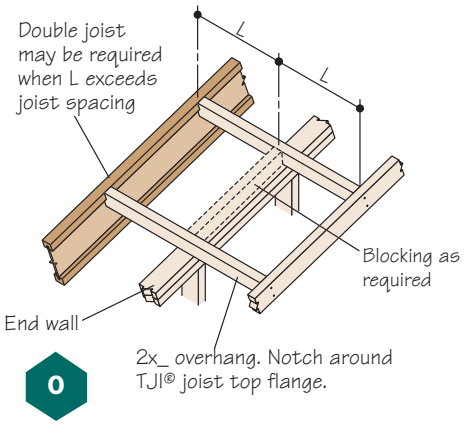
- All roof joists must be laterally supported at cantilever and end bearings. Use TJI® joist blocking panels, Trus Joist rim board for shear blocking or metal cross bracing. Attach metal cross bracing with two 10d x 1 1/2" nails at each end. **Metal cross bracing may not provide adequate lateral load transfer.**

Web Stiffener Requirements

- Required if the sides of the hanger do not laterally support at least 3/8" of the TJI® joist top flange or per footnotes on pages 20 and 21.
- Required at all sloped hanger and birdsmouth cut locations.



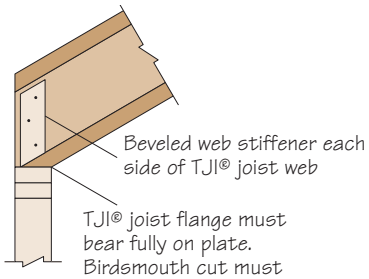
R14



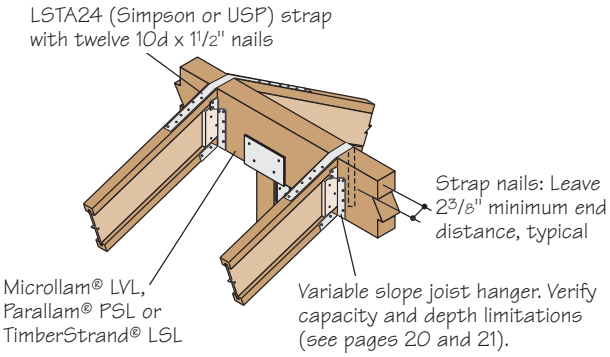
O

Birdsmouth Cut

Allowed at low end of joist only

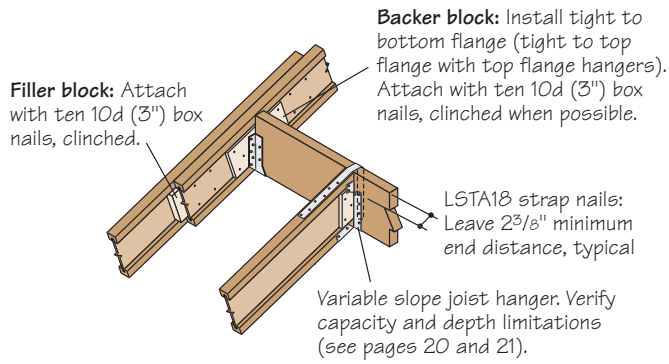


BC



H5

Straps are not required with slopes of 3" per foot or less

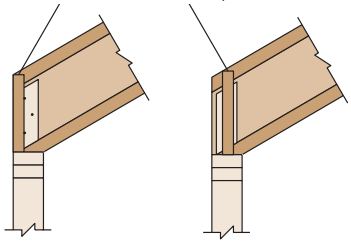


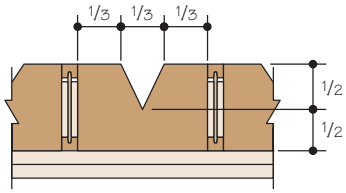
H6

Straps are not required with slopes of 3" per foot or less

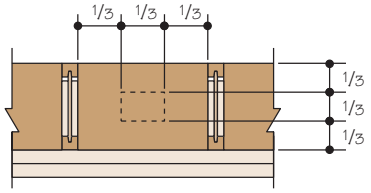
Shear Blocking and Ventilation Holes—Roof Only

Trus Joist rim board for shear blocking (between joists) may be field trimmed to match joist depth at outer edge of wall or located on wall to match joist depth





Maximum allowable V-cut



Allowed hole zone for round, square or rectangular holes

SB

Vertical depth at bearing of TJI® joists with high slopes (10"/12" to 12"/12") requires that Trus Joist rim board for shear blocking be one size deeper than the TJI® joist

Nailing Requirements

- **TJI® joists at end bearings:** Two 10d (3") box or 12d (3 1/4") box nails (1 each side), 1 1/2" minimum from end.
- **TJI® joists at intermediate bearings:**
  Roof slopes less than 4" per foot: Two 10d (3") box or 12d (3 1/4") box nails (1 each side). See detail R7.

  Roof slopes from 4" to 5" per foot: Four 10d (3") box or 12d (3 1/4") box nails (2 each side). See detail R74.

  Roof slopes greater than 5" per foot: Four 10d (3") box or 12d (3 1/4") box nails (2 each side) plus a twist strap and backer block. See detail R7S.
- **Blocking panels or shear blocking to bearing plate:**
  TJI® joist blocking panels: 10d (3") box nails at 6" on-center.
  Trus Joist rim board for shear blocking: Toenail with 10d (3") box nails at 6" on-center or 16d (3 1/2") box nails at 12" on-center.
  Shear transfer: Connections equivalent to decking nail schedule.

Diaphragm Blocking

- Details H5 and R14 may require additional blocking for shear transfer.

Filler and Backer Block Sizes

TJI®/Pro™ Depth	120TS	
	9 1/2" or 11 7/8"	14"
Filler Block (Detail H6)	2x6	2x8
Backer Block (Detail H6)	5/8" or 3/4"	5/8" or 3/4"

If necessary, increase filler and backer block height for face mount hangers. Maintain 1/8" gap at top of joist; see detail W. Filler and backer block length should accommodate required nailing without splitting.

Allowable Uniform Load—Roof (115% and 125%)

How to Use This Table

1. Determine the total load on the joist in pounds per lineal foot (plf).
2. Locate under JOIST CLEAR SPAN a span that meets or exceeds the required joist span. For slopes greater than 2" per foot, consideration must be given to the increased dead load and deflection caused by actual sloped length. Approximate this effect by multiplying the horizontal clear span by the SLOPE FACTOR to determine the joist clear span.
3. Scan to the right until you find a cell where the maximum TOTAL LOAD value meets or exceeds the required loads. TOTAL LOAD values are limited to deflection of L/180. For stiffer deflection criteria, use the L/240 values. Check local code for other deflection criteria.
4. The depth of TJI®/Pro™ 120TS joist is shown at the top of the column in which the cell is located.

Joist Clear Span	TJI®/Pro™ 120TS								
	9 1/2"			11 7/8"			14"		
	Total Load		Defl.	Total Load		Defl.	Total Load		Defl.
	Snow 115%	Non-Snow 125%	L/240	Snow 115%	Non-Snow 125%	L/240	Snow 115%	Non-Snow 125%	L/240
6'	371	403		371	403		371	403	
8'	280	304		280	304		280	304	
10'	224	244		224	244		225	244	
12'	160	174	156	187	204		188	204	
14'	118	128	101	157	171		161	175	
16'	90	92	69	121	131	118	141	154	
18'	66	66	49	95	104	85	117	128	125
20'	48	48	36	77	84	63	95	104	93
22'	37	37	27	63	63	47	79	86	71
24'	28	28	21	49	49	37	66	72	55
26'	22	22		39	39	29	57	58	44
28'	18	18		31	31	23	47	47	35
30'				25	25	19	38	38	29
32'				21	21		32	32	24

Slope Factors

Slope	2 1/2 in 12	3 in 12	3 1/2 in 12	4 in 12	4 1/2 in 12	5 in 12	6 in 12	7 in 12	8 in 12	9 in 12	10 in 12	11 in 12	12 in 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

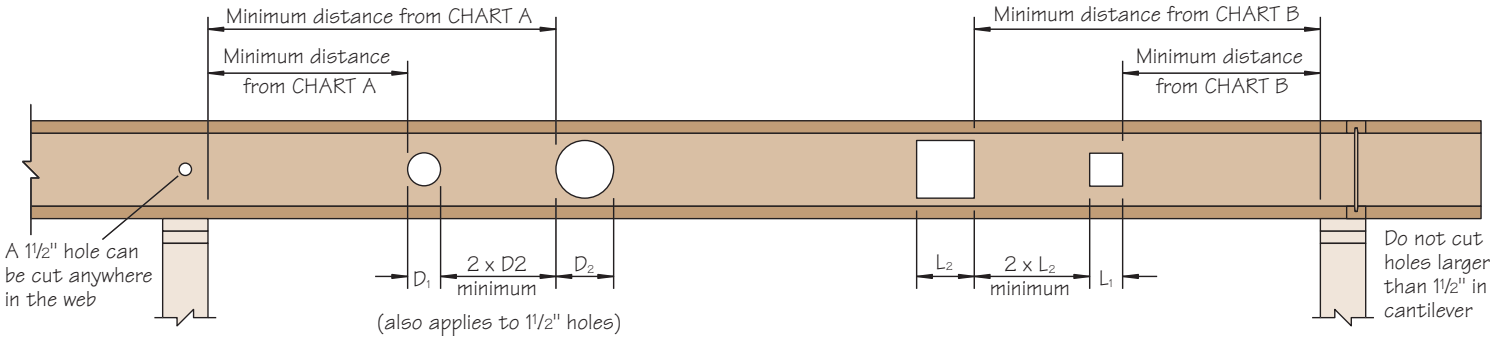
General Notes

Table is based on:

- Uniformly loaded joists.
- Values shown assume no composite action provided by sheathing.
- More restrictive of simple or continuous span.
- Total load limits joist deflection to L/180.
- Deflection (DEFL.) is based on joist deflection of L/240.
- Minimum roof surface slope of 1/4" in 12".

Web Stiffener Requirements

- Required if the sides of the hangers do not laterally support at least 3/8" of the TJI® joist top flange or per footnotes on pages 20 and 21.
- Required at all sloped hanger and birdsmouth cut locations.



How to Use These Charts

1. Determine the hole shape (round, square or rectangular) and select the appropriate chart – A or B.
2. Under HOLE SIZE, locate the column that meets or exceeds the size of hole you require.
3. Use the first column to identify the TJI®/Pro™ 120TS joist depth being used in your floor or roof system.
4. Scan to the right until you intersect the column that contains the hole size you selected.
   The value shown is the required minimum distance from edge of the hole to the inside face of the nearest support.

Chart A – Round Holes

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

TJI®/Pro™ 120TS	Round Hole Size											
	2"	3"	4"	5"	6"	6¼"	7"	8"	8⅝"	9"	10"	10¾"
9½"	2'-0"	2'-6"	3'-6"	4'-6"	6'-6"	7'-0"	–	–	–	–	–	–
11⅞"	1'-0"	1'-6"	2'-6"	3'-0"	4'-0"	4'-0"	5'-0"	6'-6"	8'-0"	–	–	–
14"	1'-0"	1'-0"	1'-0"	2'-0"	2'-6"	3'-0"	3'-6"	4'-6"	5'-0"	5'-0"	7'-0"	8'-6"

Chart B – Square or Rectangular Holes

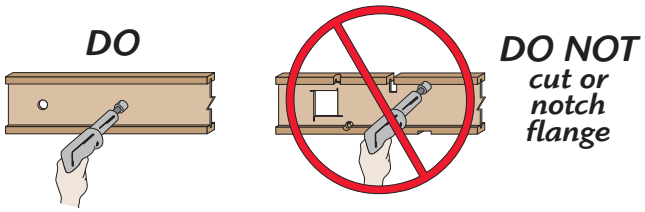
Minimum distance from inside face of any support to nearest edge of hole

TJI®/Pro™ 120TS	Square or Rectangular Hole Size											
	2"	3"	4"	5"	6"	6¼"	7"	8"	8⅝"	9"	10"	10¾"
9½"	2'-0"	3'-0"	4'-0"	6'-0"	6'-6"	6'-6"	–	–	–	–	–	–
11⅞"	1'-6"	2'-6"	3'-6"	4'-6"	6'-6"	7'-6"	8'-0"	8'-6"	9'-0"	–	–	–
14"	1'-0"	2'-0"	3'-0"	4'-0"	5'-6"	5'-6"	7'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-6"

Rectangular holes based on measurement of longest side.

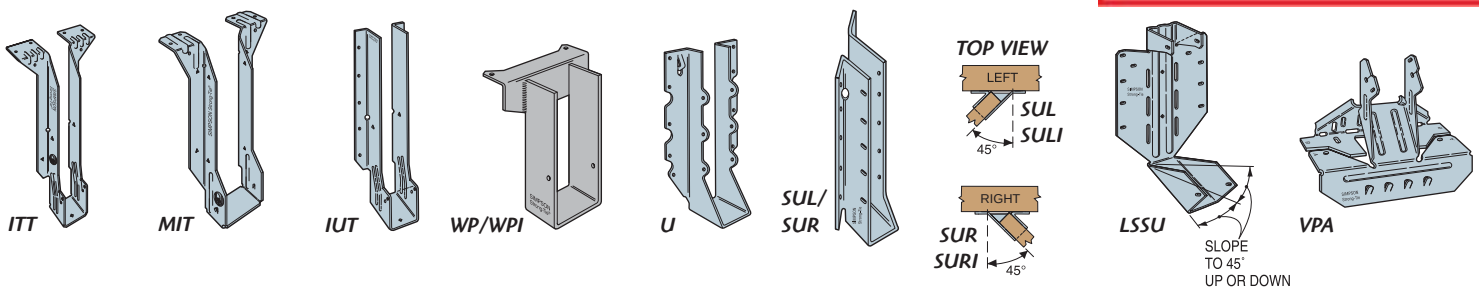
General Notes

- If more than one hole is cut into the web, the distance between the edges of the holes must be at least 2x the length of the largest hole.
- Holes may be located vertically anywhere within the web. Leave ⅛" 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.
- Distances in the charts above are based on uniformly loaded joists using the maximum loads shown for any of the tables listed within this brochure. For other load conditions or hole configurations not included in these charts refer to our TJ-Beam® software or contact your Trus Joist representative.
- For simple span (5 foot minimum) uniformly loaded joists meeting the requirements of this brochure, one maximum size round hole may be located at the center of the joist span **provided no other holes occur in the joist. DO NOT cut into joist flanges when cutting the web.**



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

Legacy Literature
See Note on Front Cover



Single Joist Hanger

	TJI®/Pro™ 120TS	Hanger
Top Flange Hanger	9 1/2"	ITT9.5
	11 7/8"	ITT11.88
	14"	ITT14
Face Mount Hanger	9 1/2"	IUT9
	11 7/8"	IUT11
	14"	IUT14

Joist: 10d x 1 1/2" nails.
Header: 10d (3") common nails.
Top flange hangers require 10d x1 1/2" for TJI® joist headers or single 2x_ nailers.

Double Joist Hanger

	TJI®/Pro™ 120TS	Hanger	Maximum Load (lbs) Floor
Top Flange Hanger	9 1/2"	MIT49.5	See Table A
	11 7/8"	MIT411.88	
	14"	MIT414	
Face Mount Hanger	9 1/2"	U410	1560
	11 7/8"	U410	1560
	14"	U414	1790

- Face mount hanger loads may be increased 15% for snow roofs or 25% for non-snow roofs.

Joist: 10d x 1 1/2" nails.
Header: 10d (3") common nails.
Top flange hangers require 10d x 1 1/2" for TJI® joist headers or single 2x_ nailers.

Variable Slope Seat Joist Hanger

TJI®/Pro™ 120TS	Hanger	Sloped Only	Skewed or Sloped and Skewed
9 1/2"–14"	LSSUI25	1275	1065

- LSSU hangers can be field adjusted for slopes and skews of up to 45 degrees.
- Loads have been increased 15% max. for short term roof loading.

Joist: 10d x 1 1/2" nails.
Header: 10d (3") common nails.

Face Mount Skewed 45° Joist Hanger

TJI®/Pro™ 120TS	Hanger
9 1/2"	SURI9 or SULI9
11 7/8" and 14"	SURI11 or SULI11

Joist: 10d x 1 1/2" nails.
Header: 16d (3 1/2") common nails.

Variable Slope Seat Connector

TJI®/Pro™ 120TS	Connector	Maximum Load (lbs)
9 1/2"–14"	VPA25	1050

- VPA connectors may be used only on slopes of 3"/12" through 12"/12".

Joist: 10d x 1 1/2" nails.
Header: 16d (3 1/2") common nails.

Table A Maximum Load (lbs) for Top Flange Hangers

Header Material	MIT	WP/WPI
Beam	1565	2000
TJI® Joist Header	1230	2030
Wood Nailer	1570	2500

- Loads in Table A cannot be increased for duration of load.

General Notes

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

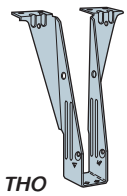
Contact your Trus Joist representative for assistance with other hanger or support conditions.

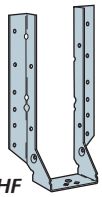
Shaded hangers require web stiffeners.

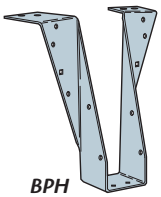
- Some hangers shown have less capacity than that of the TJI® joists. The joist hanger capacity must be checked for applications beyond the floor span tables or when maximum loads are given.
- All hangers are assumed to resist downward floor loads (downward roof loads for LSSU or TMU hangers).
- Use sloped seat hangers when TJI® joist slope exceeds 3/8"/12".
- Leave 1/16" clearance (1/8" maximum) between the end of the supported joist and the header or hanger.
- Fill all round, PAN and dimple nail holes. Hangers may have a greater or lesser capacity with different nailing criteria or other support conditions.

Header Requirements

- Tables assume TJI® joist headers or beams comprised of Trus Joist products, Douglas fir or southern pine species.
- Minimum header width for single joist top flange hangers is 3" (1 1/2" for ITT hangers).
- Minimum header width for double joist top flange hangers is 3".
- Minimum header width for face mount hangers is 1 3/4".


THO


THF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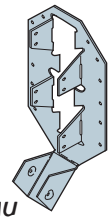
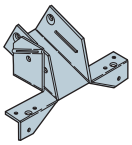

TMU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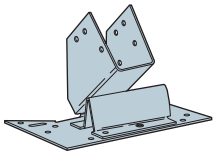
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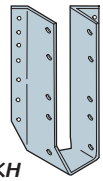
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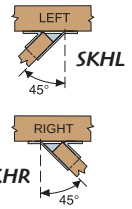
TOP VIEW



Single Joist Hanger

	TJI®/Pro™ 120TS	Hanger
Top Flange Hanger	9 1/2"	THO17950
	11 7/8"	THO17118
	14"	THO17140
Face Mount Hanger	9 1/2"	THF17925
	11 7/8"	THF17112
	14"	THF17140

Joist: 10d x 1 1/2" nails.

Header: 10d (3") common nails.

Use 10 x 1 1/2" for top flange hangers.

Double Joist Hanger

	TJI®/Pro™ 120TS	Hanger	Maximum Load (lbs) Floor
Top Flange Hanger	9 1/2"	THO35950	See Table A
	11 7/8"	THO3511.88	
	14"	THO35140	
Face Mount Hanger	9 1/2"	THF35925	1345
	11 7/8"	THF35112	1790
	14"	THF35140	2240

- Face mount hanger loads may be increased 15% for snow roofs or 25% for non-snow roofs.

Joist: 10d (3") common nails.

Header: 16d (3 1/2") common nails.

Use 10d x 1 1/2" common nails for top flange hangers.

Use 10d (3") common nails for THF face mount hangers.

Top flange hangers require 10d x 1 1/2" if supported by TJI® joist headers or single 2x_ nailers.

Variable Slope Seat Joist Hanger

TJI®/Pro™ 120TS	Hanger
9 1/2"–14"	TMU179

- TMU hangers can be field adjusted for slopes from 8"/12" up to 12"/12" down.
- TMU hangers can be field adjusted for skews up to 45 degrees.
- Loads have been increased 15% max. for short term roof loading.
- Supplemental lateral restraint is necessary for 14" deep TJI® joists. Contact your Trus Joist representative for assistance.

Joist: 10d x 1 1/2" nails.

Header: 10d (3") common nails, typical.

Face Mount Skewed 45° Joist Hanger

TJI®/Pro™ 120TS	Hanger
9 1/2"	SKH1720-R or SKH1720-L
11 7/8"–14"	SKH1724-R or SKH1724-L

Joist: 10d x 1 1/2" nails.

Header: 10d (3") common nails.

Variable Slope Seat Connector

TJI®/Pro™ 120TS	Connector	Maximum Load (lbs)
9 1/2"–14"	TMP175	1150
	TMPH175	1290

- TMP connectors may only be used on slopes of 1"/12" to 6"/12".
- TMPH connectors may only be used on slopes of 6"/12" to 12"/12".

Joist: 10d x 1 1/2" nails.

Header: 10d (3") common nails.

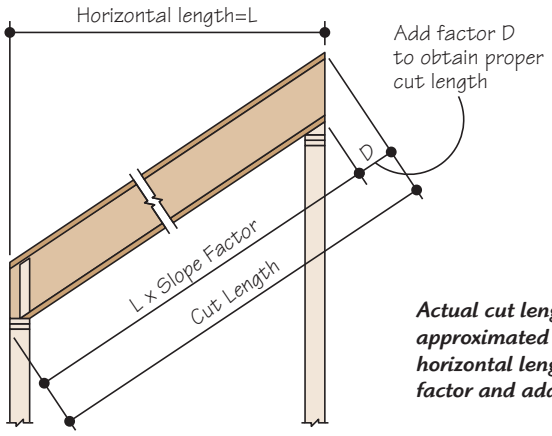
Table A Maximum Load (lbs) for Top Flange Hangers

Header Material	THO	BPH
Beam	2050	3510
TJI® Joist Header	2050	2050
Wood Nailer	1360	2080

- Loads in Table A cannot be increased for duration of load.

Refer to page 20 for General Notes

TJI® Joist Cut Length Calculation



Actual cut length can be approximated by multiplying the horizontal length by the slope factor and adding the D factor

D Factor

Slope	D Factor		
	9 1/2"	11 7/8"	14"
2 1/2 in 12	2"	2 1/2"	3"
3 in 12	2 3/8"	3"	3 1/2"
3 1/2 in 12	2 7/8"	3 1/2"	4 1/8"
4 in 12	3 1/4"	4"	4 3/4"
4 1/2 in 12	3 5/8"	4 1/2"	5 1/4"
5 in 12	4"	5"	5 7/8"
6 in 12	4 3/4"	6"	7"
7 in 12	5 5/8"	7"	8 1/4"
8 in 12	6 3/8"	8"	9 3/8"
9 in 12	7 1/8"	9"	10 1/2"
10 in 12	8"	10"	11 3/4"
11 in 12	8 3/4"	11"	12 7/8"
12 in 12	9 1/2"	11 7/8"	14"

Slope Factors

Slope	2 1/2 in 12	3 in 12	3 1/2 in 12	4 in 12	4 1/2 in 12	5 in 12	6 in 12	7 in 12	8 in 12	9 in 12	10 in 12	11 in 12	12 in 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

Fastening of Sheathing and PSF Conversion Table

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

Nail Size	Closest On-Center Spacing Per Row	
	TJI®/Pro™ 120TS	Trus Joist Rim Board
8d (2 1/2") box	2"	4"
8d (2 1/2") common	2"	4"
10d (3"), 12d (3 1/4") box	2"	4"
10d (3"), 12d (3 1/4") common	3"	4"
16d (3 1/2") common	4"	6"(1)

(1) When nailing through the wall sill plate and floor sheathing, closest on-center spacing is 3" (1 3/8" max. penetration).

General Notes

- Maximum spacing of nails is 18" on-center.
- If more than one row of nails is used, the rows must be offset at least 1/2" and staggered.
- 14 ga. staples may be substituted for 8d (2 1/2") nails if minimum penetration of 1" into the TJI® joists or rim board is achieved.
- Table also applies for the attachment of TJI® rim joists and blocking panels to the wall plate.

PSF to PLF Conversions

Load in pounds per lineal foot (PLF)

O.C. Spacing	Load in Pounds per Square Foot (PSF)								
	20	25	30	35	40	45	50	55	60
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

Design Properties (100% load duration)

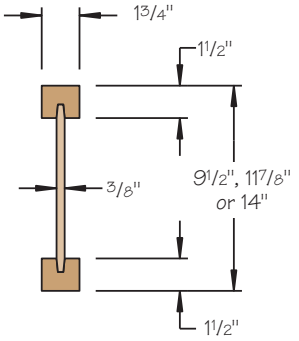
TJI®/Pro™ 120TS	Basic Properties				Reaction Properties	
	Joist Weight (lbs/ft)	Maximum Resistive Moment (ft-lbs)	Joist Only EI x 10^6 ($in.^2$ lbs)	Maximum Vertical Shear (lbs)	Maximum End Reaction (lbs)	Maximum Intermediate Reaction (lbs) No Web Stiffeners
9 1/2"	2.4	2,570	141	1,120	1,120	2,480
11 7/8"	2.7	3,430	246	1,420	1,120	2,480
14"	2.9	4,205	368	1,710	1,120	2,480

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 NER-119 and NER-200, and these increases are reflected in span tables.
- The reaction values above are based on assumed minimum bearing lengths of 1 3/4" at ends and 3 1/2" at intermediate supports.
- Values shown throughout this brochure are applicable in dry-service conditions only.
- The following formula approximates the uniform load deflection of Δ (inches):

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

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



TJI®/Pro™ 120TS Joists

Top and bottom flanges of 1 3/4" x 1 1/2" TimberStrand® LSL with 3/8" Performance Plus® web.

Material weights (Include TJI® joist weights in dead load calculations – see table above for joist weights)

Sheathing
Based on: Southern pine – 40 pcf for plywood, 44 pcf for OSB
Douglas fir – 36 pcf for plywood, 40 pcf for OSB

	Southern Pine	Douglas Fir
1/2" plywood	1.7 psf.	1.5 psf
5/8" plywood	2.0 psf	1.8 psf
3/4" plywood	2.5 psf	2.3 psf
1 1/8" plywood	3.8 psf	3.4 psf
1/2" OSB	1.8 psf.	1.7 psf
5/8" OSB	2.2 psf	2.0 psf
3/4" OSB	2.7 psf	2.5 psf
1 1/8" OSB	4.1 psf.	3.7 psf

Roofing Materials

Asphalt shingles	2.5 psf
Wood shingles	2.0 psf
Clay tile	9.0 to 14.0 psf
Slate (3/8" thick)	15 psf

Roll or Batt Insulation (1" thick)

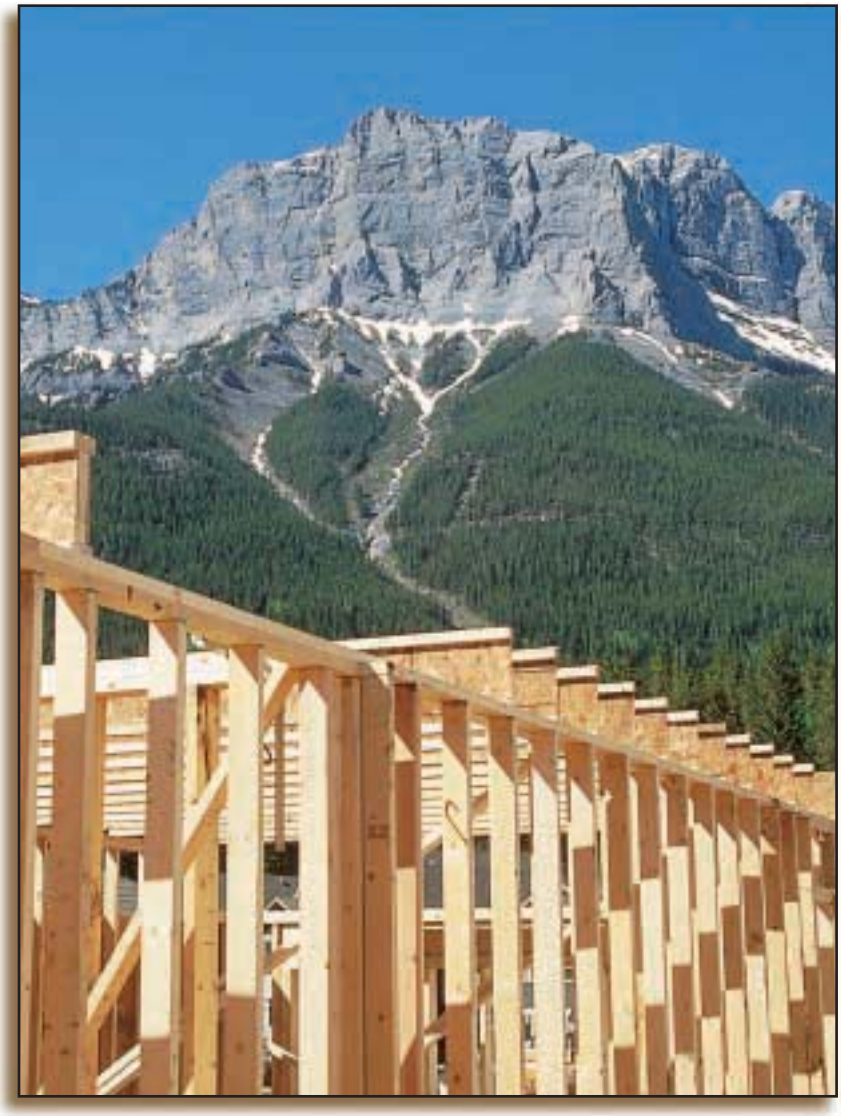
Rock wool	0.2 psf
Glass wool	0.1 psf

Floors

Hardwood (Nominal 1")	4.0 psf
Concrete (1" thick)	
Regular	12.0 psf
Lightweight	8.0 to 10.0 psf
Sheet vinyl	0.5 psf
Carpet and pad	1.0 psf
3/4" ceramic or quarry tile	10.0 psf
Gypsum concrete (3/4")	6.5 psf

Ceilings

Acoustical fiber tile	1.0 psf
1/2" gypsum board	2.2 psf
5/8" gypsum board	2.8 psf
Plaster (1" thick)	8.0 psf

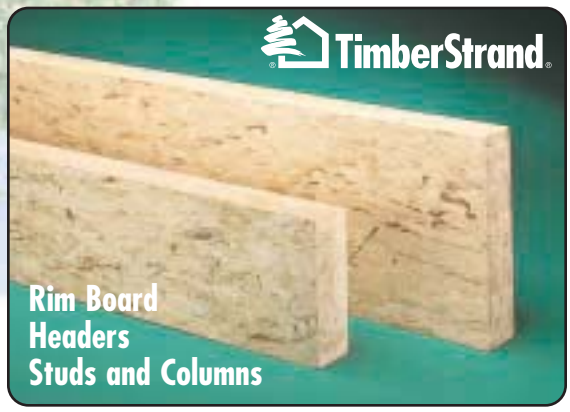


Changing the Way You Build™

Since the 1960s, builders and specifiers have relied on quality products from Trus Joist. Cutting-edge research and development have resulted in a product line that gives you the superior support you need in a structure, while our skilled sales and technical staff provides the additional support you need to get the best performance from those products.

Consistent, top quality Trus Joist building products use more and waste less of precious timber resources, resulting in buildings that are structurally—and environmentally—sound. Homes built on the exceptional strength and consistency of Microllam® LVL, Parallam® PSL, TimberStrand® LSL and Silent Floor® joists are homes where floors don't squeak, walls don't crack and the entire structure is designed to work together for unparalleled performance.

Put all of these products together with Trus Joist sales and engineering services, and you have the FrameWorks® Building System, Changing the Way You Build™…



Product Warranty

Trus Joist warrants that its products will be free from manufacturing errors or defects in workmanship and material.

In addition, provided the product is correctly installed and used, the company warrants the adequacy of its design for the normal and expected life of the building.

Trus Joist® A Weyerhaeuser Business

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Legacy Literature
See Note on Front Cover

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