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01-21-2003

U.S. Patent & TMOfc/TM Mail Rcpt Dt. #30

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE TRADEMARK TRIAL AND APPEAL BOARD

WEYERHAEUSER COMPANY, Opposer,	)	
v.	)	Opposition No.
GEORGIA MATTRESS COMPANY Applicant.	)	

03 JAN 28 AM 9:31

BOX TTAB FEE
Commissioner for Trademarks
2900 Crystal Drive
Arlington, Virginia 22202-3513

NOTICE OF OPPOSITION

In the matter of the application of Georgia Mattress Company ("Applicant"), for registration of the mark PROTRUSS and design, application Serial No. 76/366,048, published in the Official Gazette on December 17, 2002. Weyerhaeuser Company, a corporation organized under the laws of Washington ("Opposer"), believes that it will be damaged by registration of the mark shown in Serial No. 76/366,048, and hereby opposes registration.

The grounds for opposition are as follows.

1. Opposer is a corporation organized under the laws of Washington, with its principal place of business at 33663 Weyerhaeuser Way South, Federal Way, Washington 98003.

2. Opposer and its predecessor in interest have been engaged in the business of manufacturing and selling structural wood products, namely, beams, columns and headers, throughout the United States, under the marks PRO, TJI/PRO, TJ-PRO and PRO JOIST for several

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years . Examples of use of these marks are appended hereto as Exhibit A.

3. Opposer filed a PRO JOIST trademark application in the United States Patent and Trademark Office for structural wood products, including beams, columns and headers on July 5, 2001 and U.S. Serial No. 76/280,791 was assigned to the application. A copy of the Filing Receipt is appended hereto as Exhibit B.

4. The use of Opposer's PRO, TJI/PRO, TJ-PRO and PRO JOIST marks have been valid for several years, and has not been abandoned. Opposer's mark is symbolic of extensive good will and consumer recognition built up by Opposer through substantial amounts of time and effort in advertising and promotion.

5. Notwithstanding Opposer's rights in and to its PRO, TJI/PRO, TJ-PRO and PRO JOIST marks, Applicant, on February 4, 2002, filed an application for registration of the mark PROTRUSS and design for wooden I-joists, wooden roof truss systems, and wooden floor truss systems with related hardware for installation sold as units. That application was given Serial No. 76/366,048, and published for opposition in the Official Gazette on December 17, 2002.

6. Applicant's mark PROTRUSS and design, if registered in connection with the above identified goods, would be confusingly similar, and would result in mistake and deception because of the similarity to Opposer's use of its PRO, TJI/PRO, TJ-PRO and PRO JOIST marks in connection with structural wood products, namely beams, columns and headers, and as set forth and protected by Opposer's above-identified application.

WHEREFORE, Opposer believes that it will be damaged by registration of Applicant's mark, and prays that registration be denied.

A triplicate copy of this Notice of Opposition is enclosed. Also enclosed is our check for $300.00. Please charge our Deposit Account No. 11-1540 for any additional fees which

may be required and credit any overpayment to the same account.

DATED this 16th day of January 2003.

Respectfully submitted,

KOLISCH HARTWELL, P.C.

Peter E. Heuser
Registration No. 27,902
Customer No. 23581
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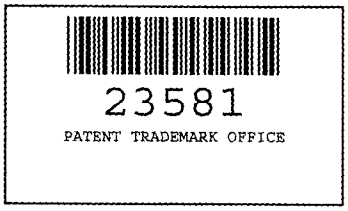


CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope, with sufficient postage prepaid, addressed to: Commissioner for Trademarks, 2900 Crystal Drive, Arlington, Virginia 22202-3513 on January 16, 2003.

Anita R. Tabayoyon
Date of Signature: January 16, 2003

Exhibit A

Trus Joist MacMillan®

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

1-800-628-3997

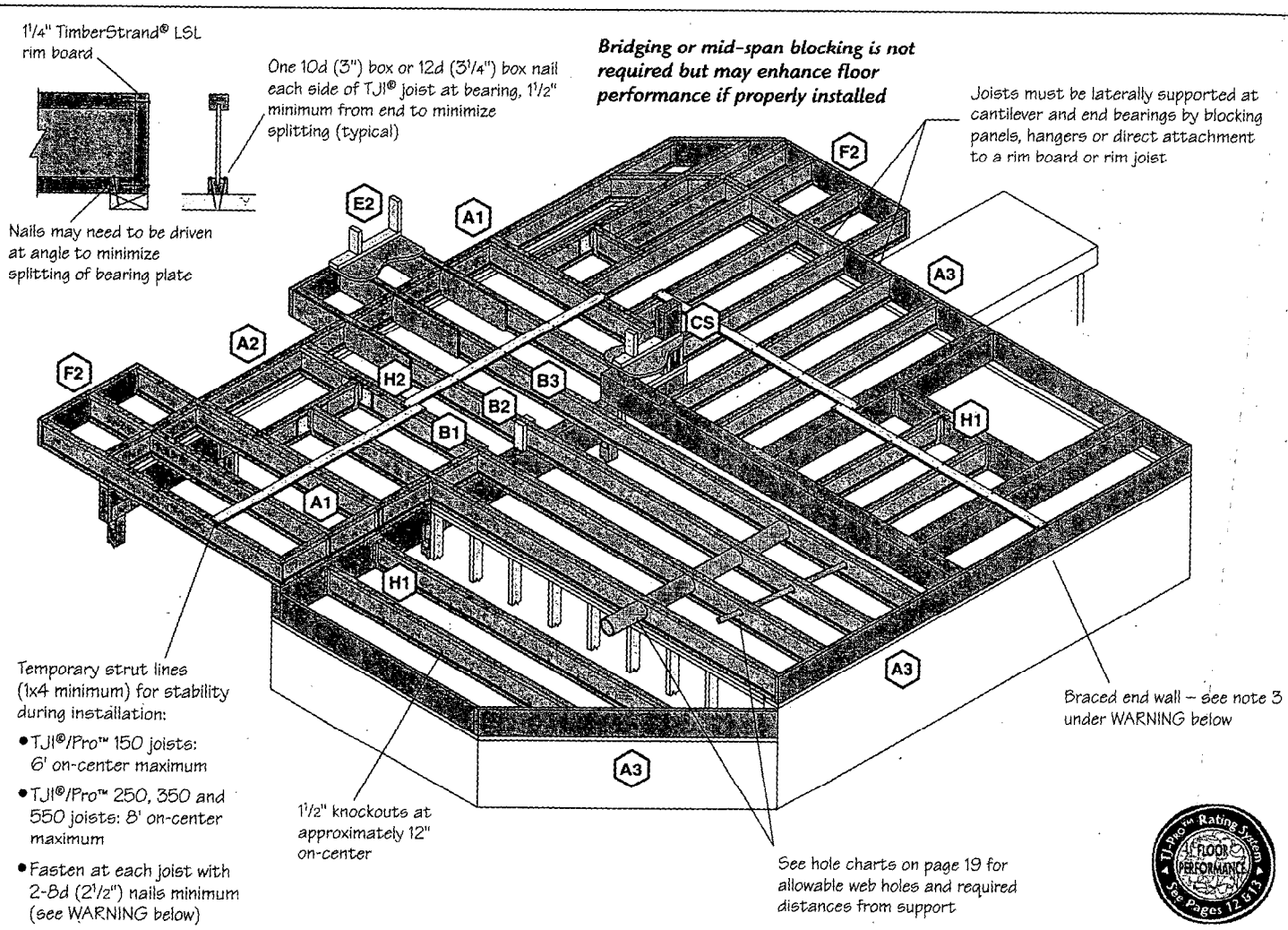
TJI®/Pro™ 150, 250, 350 & 550 Joists

Featuring the Silent Floor® System for Residential Applications

TJI® Joist

Trus Joist MacMillan®

TYPICAL Silent Floor® SYSTEM

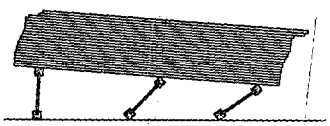


DO NOT allow workers to walk on joists until braced. INJURY MAY RESULT. See notes 1, 2 & 3 below.

WARNING
JOISTS ARE UNSTABLE UNTIL BRACED LATERALLY

BRACING INCLUDES:

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

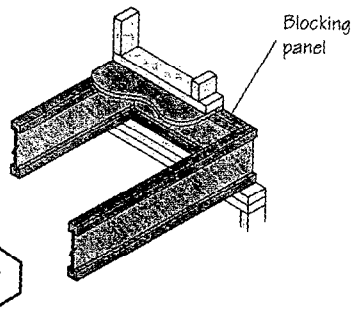


DO NOT stack building materials on unsheathed joists. Stack only over beams or walls. See note 4 below.

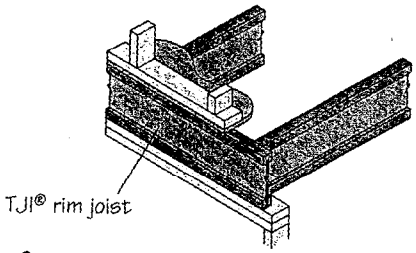
WARNING NOTES:

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) nailed to the first 4 feet of joists at the end of the bay.
3. Temporary 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.

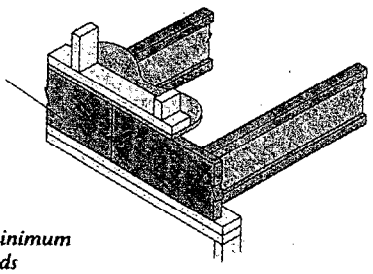


A1



A2 ***Must have 1¾" minimum joist bearing at ends***

TIMBERSTRAND® LSL RIM BOARD

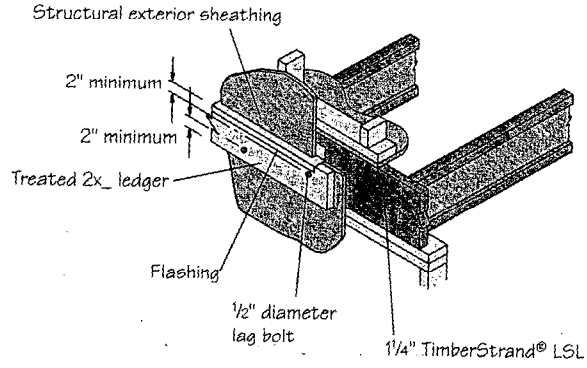


A3 ***Must have 1¾" minimum joist bearing at ends***

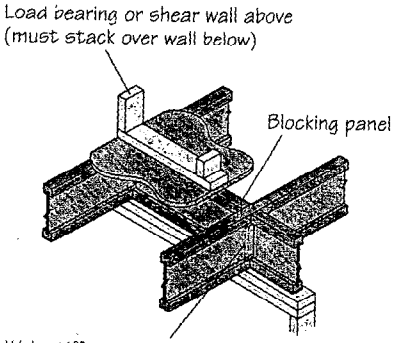
For information on lateral load capacities refer to current TimberStrand® LSL rim board literature

1¾" Microllam® LVL may also be used as rim board

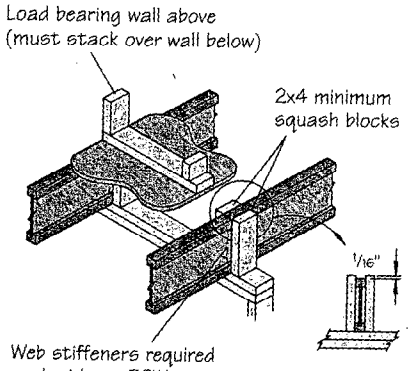
EXTERIOR DECK ATTACHMENT



LA ***Allowable load is 325 lbs. per ½" diameter lag bolt***

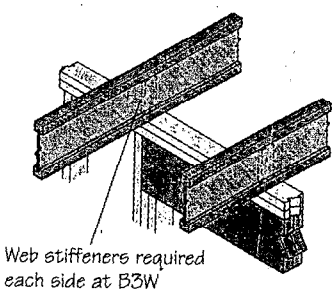


B1 B1W ***See FLOOR SPAN TABLES and GENERAL NOTES for exceptions***



B2 B2W ***See FLOOR SPAN TABLES and GENERAL NOTES for exceptions***

INTERMEDIATE BEARING – NO LOAD BEARING WALL ABOVE



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

B3 B3W ***See FLOOR SPAN TABLES and GENERAL NOTES for exceptions***

GENERAL NOTES

MINIMUM BEARING LENGTH

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

BLOCKING PANELS, RIM BOARDS OR RIM JOISTS

- Vertical load transfer at bearings must be checked for each application. Capacities of rim details shown are as follows:
  - TJI® blocking.....2000 plf
  - TJI® rim joist.....2000 plf
  - TimberStrand® LSL – 1¼".....3450 plf
  - Microllam® LVL – 1¾".....5145 plf
- Bracing complying with the code shall be carried to the foundation.

NAILING REQUIREMENTS

- **TJI® joists at bearings:** 2-10d (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.
  TimberStrand® LSL or Microllam® LVL 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: 2-10d (3") box nails, one each at top and bottom flange.
  TJI®/Pro™ 350 rim joist: 2-16d (3½") box nails, one each at top and bottom flange.
  TJI®/Pro™ 550 rim joist: Toenail joist to rim joist with 1-10d (3") box nail, each side of joist top flange.
- **2x4 minimum squash blocks:** 2-10d (3") box nails, one each at top and bottom flange.

WEB STIFFENER REQUIREMENTS

- Required if the sides of the hanger do not laterally support the TJI® joist top flange or per footnotes on pages 20 and 21.
- **TJI®/Pro™ 250, 350 and 550 joists:** Required per footnote 1 under FLOOR SPAN TABLES.

HOW TO USE THESE TABLES

1. Use the first two columns to identify the TJI® joist used in your application.
2. Locate the ROOF TRUSS SPAN (horizontal measurement) that meets or exceeds your condition.
3. Scan right across the row until you intersect the column which 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.
W - Web stiffener required each side of joist at bearing. See detail E1.
1 - 3/4" x 48" reinforcement required on one side of joist (see detail E2) or double the joists (see detail E4). Do not use detail E4 with TJI® Pro™ 550 joists.
2 - 3/4" x 48" reinforcement required on both sides of joist (see detail E3) or double the joists (see detail E4). Do not use detail E4 with TJI® Pro™ 550 joists.
X - Will not work. Reduce spacing of joists and recheck on table.

DEPTH	TJI®/Pro	ROOF TRUSS SPAN	ROOF TOTAL LOAD: 35 PSF — ON-CENTER JOIST SPACING: 16"	19.2"	24"	45 PSF — 16"	19.2"	24"	55 PSF — 16"	19.2"	24"
9 1/4"	150	24'	0	0	1	0	1	1	1	1	X
		26'	0	0	1	0	1	X	1	1	X
		28'	0	0	1	1	1	X	1	X	X
		30'	0	1	1	1	1	X	1	X	X
		32'	0	1	1	1	1	X	1	X	X
		34'	0	1	X	1	X	X	X	X	X
		36'	0	1	X	1	X	X	X	X	X
	250	24'	0	0	1	0	0	1	0	1	1
		26'	0	0	1	0	1	1	1	1	X
		28'	0	0	1	0	1	1	1	1	X
		30'	0	0	1	0	1	1	1	1	X
		32'	0	0	1	1	1	X	1	1	X
		34'	0	1	1	1	1	X	1	X	X
		36'	0	1	1	1	1	X	1	X	X
11 7/8"	150	26'	0	0	1	0	1	1	1	1	1
		28'	0	0	1	1	1	1	1	1	1
		30'	0	1	1	1	1	1	1	1	X
		32'	0	1	1	1	1	1	1	1	X
		34'	0	1	1	1	1	1	1	1	X
		36'	0	1	1	1	1	1	1	1	X
		38'	1	1	1	1	1	X	1	1	X
	250	26'	0	0	W	0	W	1	W	1	1
		28'	0	W	W	W	W	1	W	1	1
		30'	0	W	W	W	W	1	W	1	1
		32'	0	W	1	W	1	1	1	1	1
		34'	0	W	1	W	1	1	1	1	1
		36'	W	W	1	W	1	1	1	1	2
		38'	W	W	1	W	1	1	1	1	2
	350	26'	0	0	0	0	0	W	0	W	1
		28'	0	0	W	0	W	W	W	W	1
		30'	0	0	W	0	W	W	W	W	1
		32'	0	0	W	0	W	1	W	1	1
		34'	0	0	W	0	W	1	W	1	1
		36'	0	0	W	0	W	1	W	1	1
		38'	0	0	W	0	W	1	W	1	1
14"	250	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	W
		34'	0	0	0	0	0	0	0	0	W
		36'	0	0	0	0	0	0	0	0	1
		38'	0	0	0	0	0	W	0	0	1
		40'	0	0	0	0	0	W	0	0	1
	350	28'	0	W	W	W	W	1	W	1	1
		30'	0	W	1	W	W	1	W	1	1
		32'	0	W	1	W	1	1	1	1	1
		34'	0	W	1	W	1	1	1	1	1
		36'	W	W	1	W	1	1	1	1	2
		38'	W	W	1	W	1	1	1	1	2
		40'	W	W	1	1	1	1	1	1	2
16"	250	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	0
		40'	0	0	0	0	0	0	0	0	0
	350	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	0
		40'	0	0	0	0	0	0	0	0	0

GENERAL NOTES

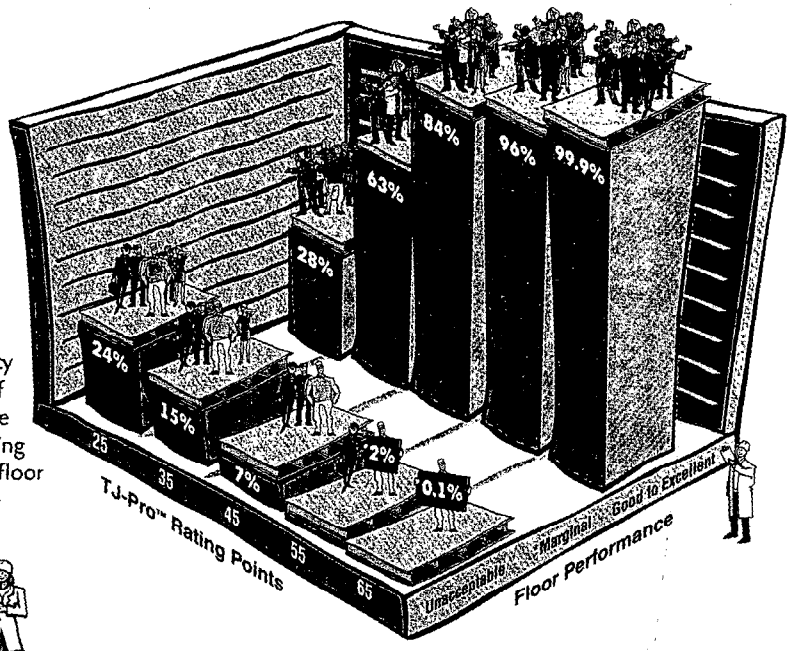
Tables are based on:

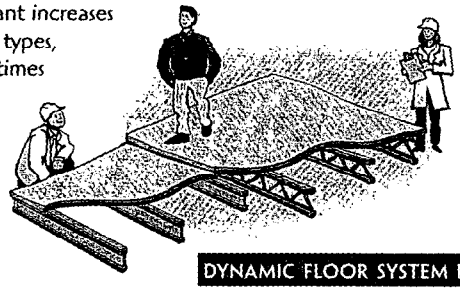
- 15 psf roof dead load.
- 80 plf exterior wall load with 3'-0" maximum width window or door openings. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" on-center, additional joists beneath the opening's trimmers may be required.
- TimberStrand® LSL or spruce-pine-fir bearing 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 programs or contact your Trus Joist MacMillan representative for assistance.

TJ-Pro™ Rating System — FLOOR PERFORMANCE — See Pages 12,613

Due to the many variables that contribute to floor performance, the TJ-Pro™ Rating System can only be assessed through the use of computer software and therefore is not included in our printed literature. Trus Joist MacMillan offers the TJ-Pro™ Rating System in its exclusive TJ-Beam™ and TJ-Xpert™ software programs.

The TJ-Pro™ Rating System allows the user to describe not only the Trus Joist MacMillan product, but other components contributing to the assembly. Varying the components and developing relative performance ratings gives the user options for enhancing the floor's performance. You also get a comparison value to assist you in determining the cost efficiency of your selection. The comparison cost value is based on the input cost of decking and the volume of floor joist in your floor assembly. Thus, you are armed with the ability to utilize the comparison cost to gain relative costing of a floor assembly per square foot. 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.

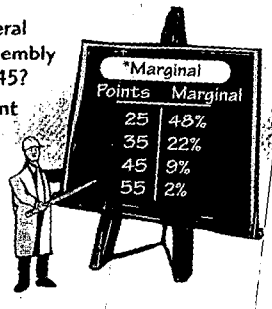


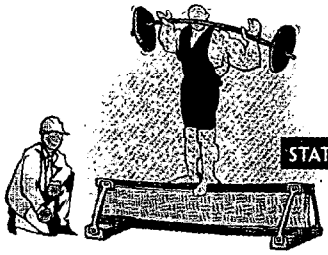


DYNAMIC FLOOR SYSTEM RESPONSE

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





Basic Stiffness – a combination of joist depth and span.

STATIC LIVE LOAD DEFLECTION

Since the mid 1960s, Trus Joist MacMillan 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 needed to 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.

We know from previous experience that a stiffer floor alone does not always assure a specifier or owner their desired level of performance. It has been well documented that **static live load deflection** criteria alone cannot produce consistent and predictable performance results and that **dynamic floor system** response needed to be a consideration. This led us to the conclusion that we needed to develop a design methodology for our customers that would provide a greater degree of assurance that a floor assembly using our products would produce a high degree of user satisfaction.

In the early 1990s, Trus Joist MacMillan began a research project to develop the desired design methodology for evaluating floor performance. 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. Ideally this tool could be incorporated into our industry-leading TJ-Beam™ and TJ-Xpert™ software. We reviewed state-of-the-art literature on the subject and conducted a range of research at universities, in our own facilities and in the field. We supplemented this knowledge with information gathered from 850 real world floor applications of our products and created a computer model to analyze these applications statically. The numerical results were correlated with subjective evaluations of "feel" for these floors to develop the final design methodology.

The end result of our intensive testing and evaluation programs is the new **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 expected with each rating category can then be obtained from the chart. Is this rating system perfect? No, because humans respond to floor motions in ways and degrees nearly as varied as their physical and emotional differences. This new evaluation methodology from Trus Joist MacMillan 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 ultimate benefit is that for the first time you can now take your understanding of how others may want a floor to perform and specify a floor assembly with a probability approach that identifies the percentage of satisfied users.

How high a percentage is "right"? This may not be as difficult a question as it appears. All of us in this business have an experience base from which to draw upon. As a specifier, you have the advantage of knowing the level of expectation the floor assembly will need to perform to. While neither you nor Trus Joist MacMillan 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.

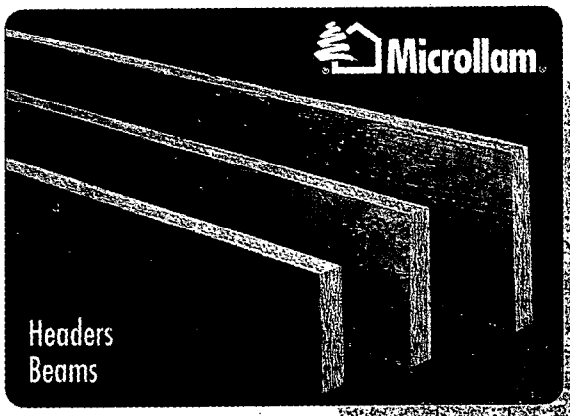
Trus Joist MacMillan®

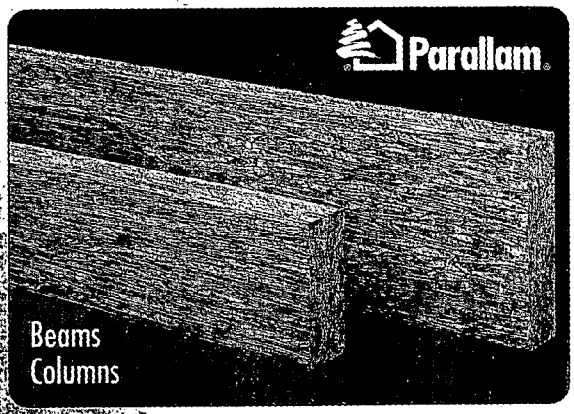
CHANGING THE WAY YOU BUILD

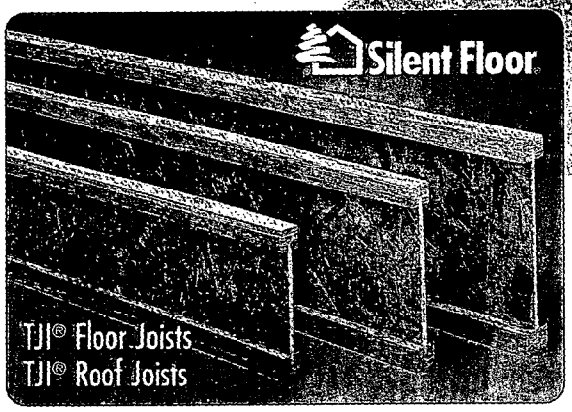
Since the 1960s, builders and specifiers have relied on quality products from Trus Joist MacMillan. Cutting-edge research and development have resulted in a product line that gives you the superior support you need in a structure, while our skilled sales and technical staff provides the additional support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

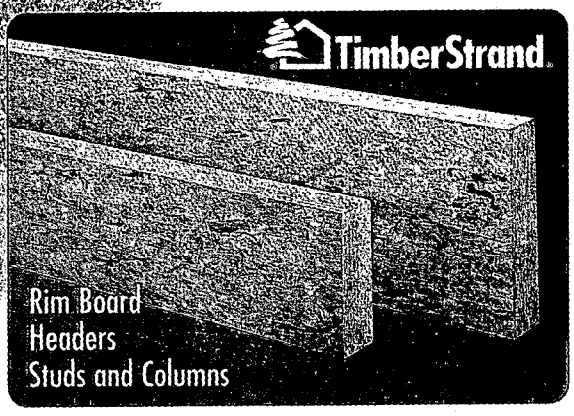
Consistent, top quality Trus Joist MacMillan building products use more and waste less of precious timber resources, resulting in buildings that are structurally – and environmentally – sound. Homes built on the exceptional strength and consistency of Microllam® LVL, Parallam® PSL, TimberStrand® LSL, 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 MacMillan sales and engineering services, and you have the FrameWorks® Building System, changing the way you build...









Product Warranty

Trus Joist MacMillan 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.

This warranty is backed by the full resources of Trus Joist MacMillan and by underwritten product liability insurance.

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Tom Denig, President and C.E.O.

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SPECIFIER'S GUIDE

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- Environmentally Responsible
- Uniform and Predictable
- Resists Bowing, Twisting and Shrinking
- Lightweight for Fast Installation
- Significantly Reduces Callbacks
- Available in Long Lengths
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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 are quieter, walls don't crack and the entire structure is designed to work together for unparalleled performance.

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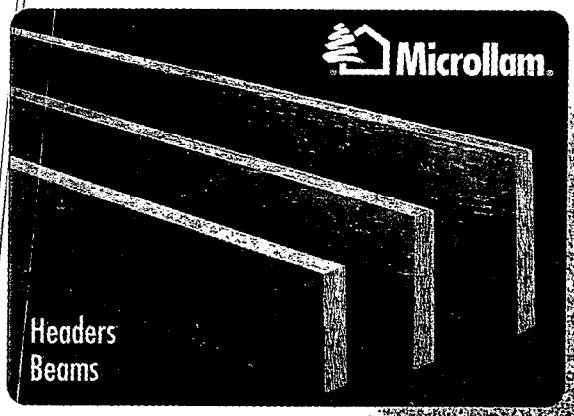

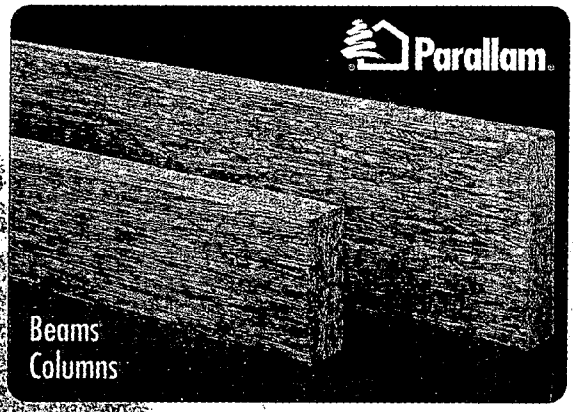

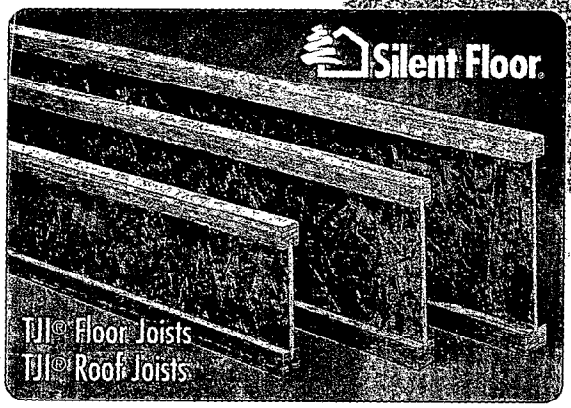

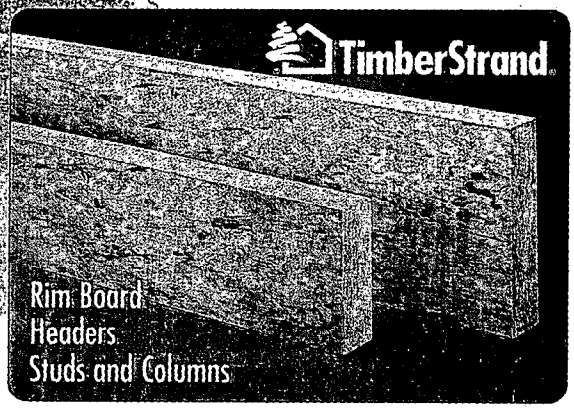

Product Warranty

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.

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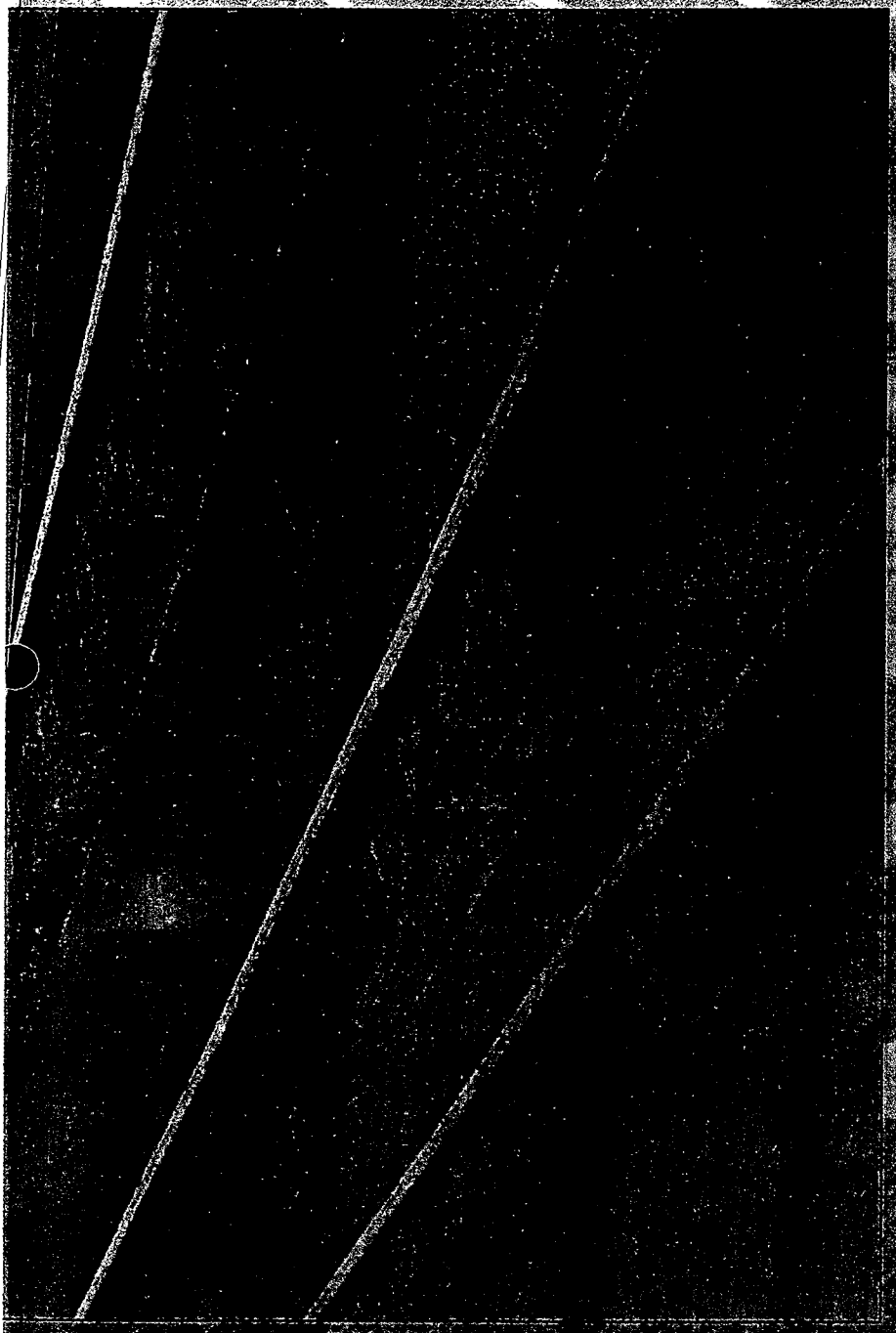

TJI®/Pro™ 120TS Joists

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
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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	9½"	18'-0"	16'-6"	15'-7"	14'-6"
	11⅞"	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	9½"	18'-0"	16'-2"	14'-9"	13'-2"
	11⅞"	21'-6"	18'-9"	17'-1"	15'-3"
	14"	24'-0"	20'-9"	18'-11"	16'-5"

MAXIMUM ALLOWABLE SPANS PER CODE

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	9½"	16'-4"	14'-11"	14'-1"	13'-1"
	11⅞"	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	9½"	16'-4"	14'-11"	14'-1"	13'-1"
	11⅞"	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.

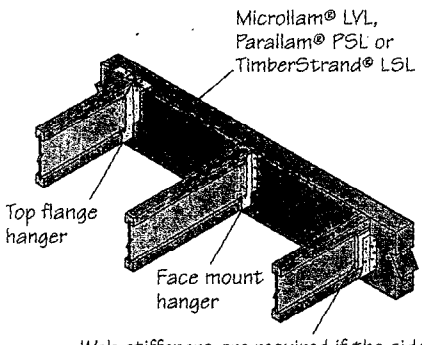
General Notes

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

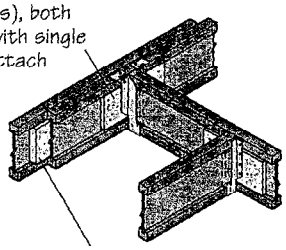
- Required if the sides of the hanger do not laterally support at least ⅜" of the TJI® joist top flange or per footnotes on pages 20 and 21.
- **End Bearings:** Not required.
- **Intermediate Bearings:** Not required.



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

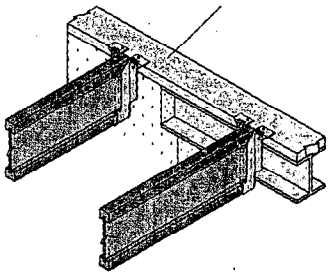
Backer block: Install tight to top flange (tight to bottom flange with face mount hangers), both sides of web with single TJI® joists. Attach with ten 10d (3") box nails, clinched when possible.



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***

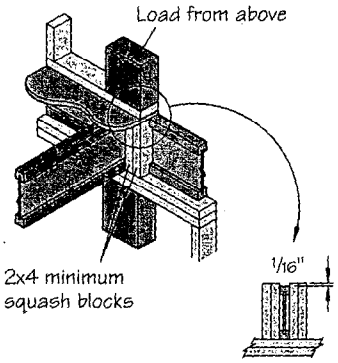
Bearing plate: Flush plate with inside face of wall or beam

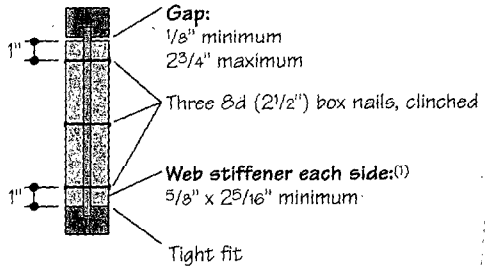


H3

Web Stiffener Attachment

TJI®/Pro™ 120TS Joists





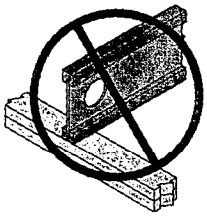
CS ***Use 2x4 minimum squash blocks to transfer load from above to bearing plate below***

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

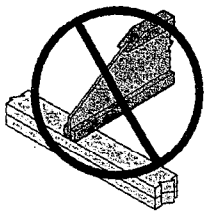
These Conditions are NOT Permitted

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

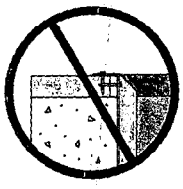


DO NOT use sawn lumber for rim board or blocking

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"	120TS 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.

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	2½ in 12	3 in 12	3½ in 12	4 in 12	4½ 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

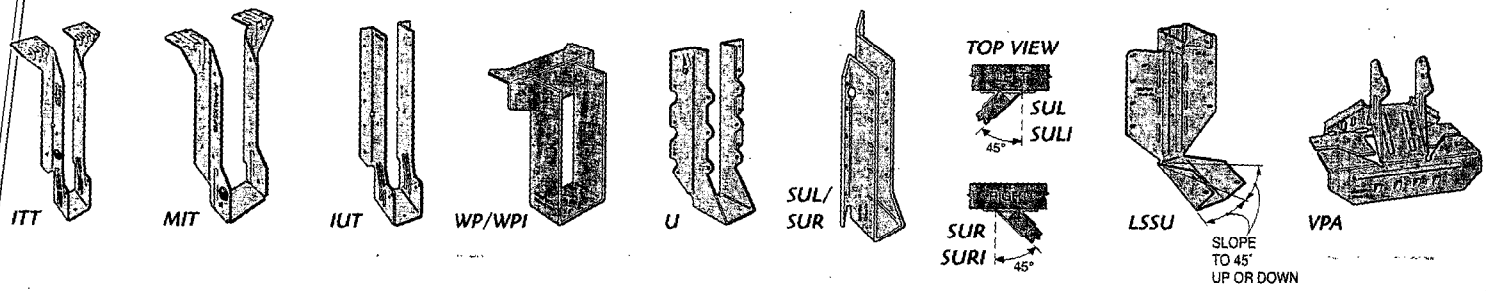
able is based on:

- 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.

Framing Connectors (Simpson Strong-Tie®)



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"	IUT410	1560
	11 7/8"	IUT410	1560
	14"	IUT414	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"	LSSU25	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 13/4".

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.

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

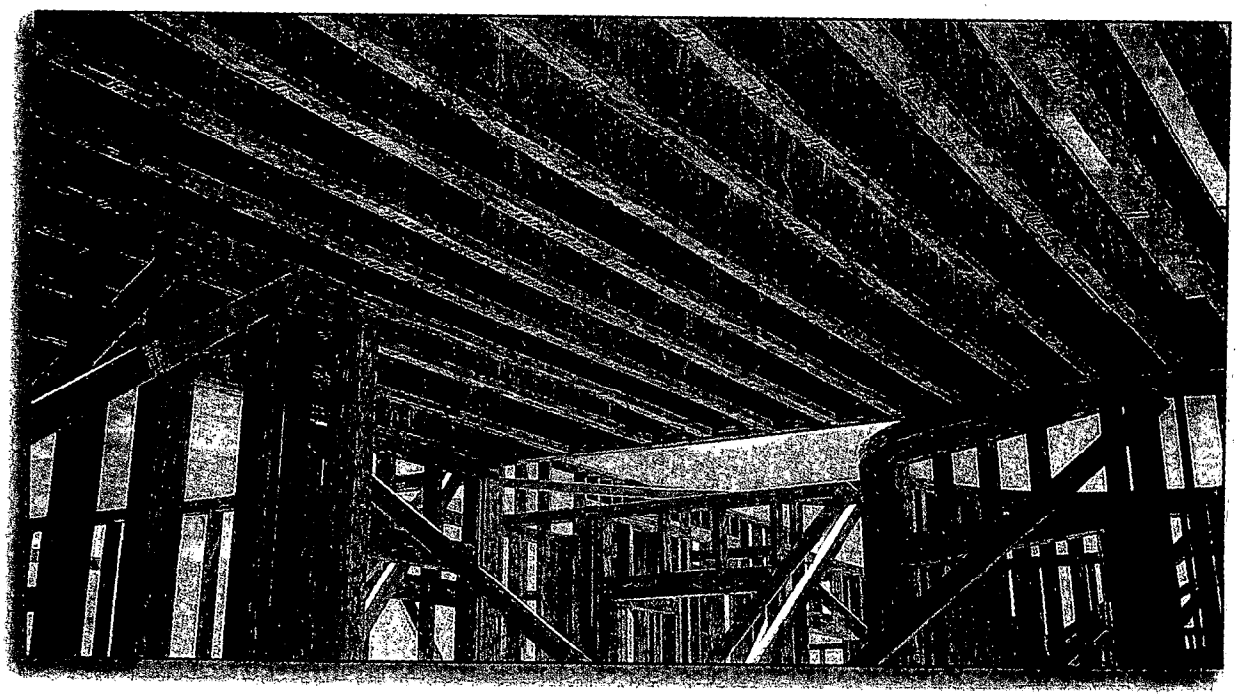
General Notes

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

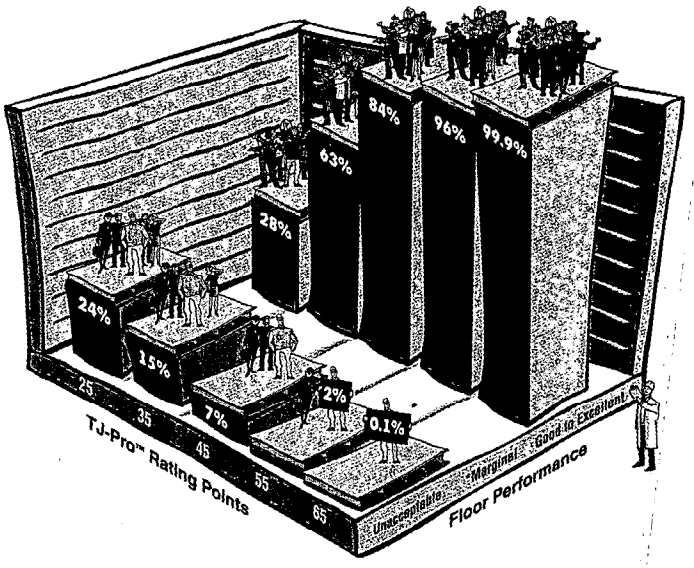
- Required if the sides of the hanger do not laterally support at least 3/8" of the TJI® joist top flange or per footnotes on pages 20 and 21.

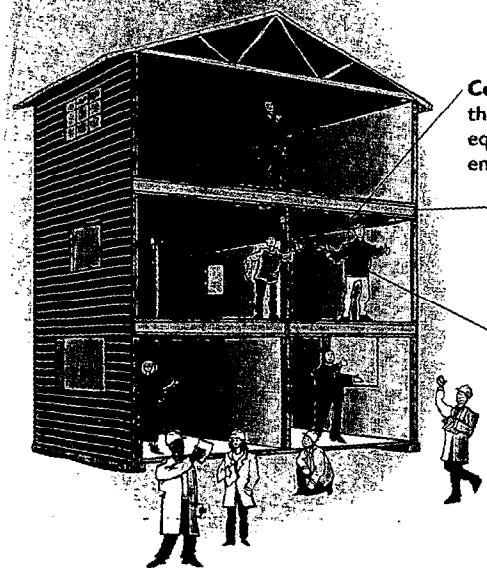


What the TJ-Pro™ Rating System Can Do For You

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.





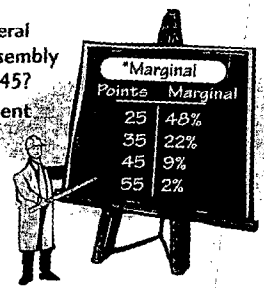
Ceiling – A ceiling directly applied to the bottom edge of floor members—or equivalent strapping—is a performance enhancement.

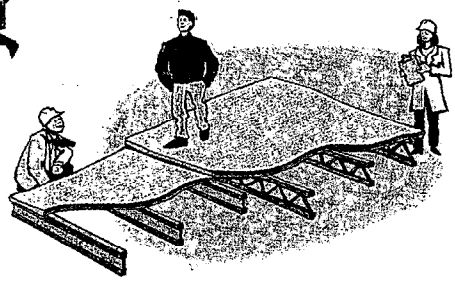
Continuity – Continuous joists over several supports generally perform better than simple spans. Care must be taken if the joists continue into another occupancy.

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.

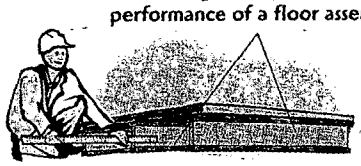
Example: How does the general public "feel" about a floor assembly with a Performance Value of 45?

- 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.



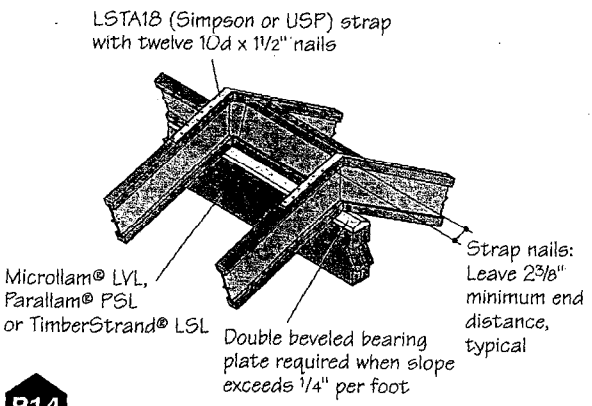
Since the mid 1960s, Trus Joist has been involved in evaluating floor performance. Our early observations suggested that the minimum deflection criteria used by the industry (L/360 or less under live load) provided little assurance of an acceptable floor. In an effort to improve performance, we began 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.

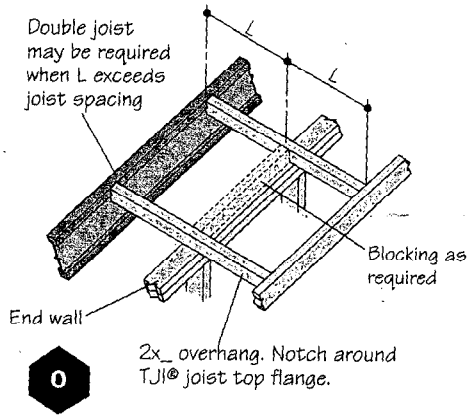
In the early 1990s, Trus Joist began a research project to develop the desired design methodology for evaluating floor performance, including consideration of dynamic response. Our objective was to combine the findings of our research and 30 years of experience into a tool that can be used to evaluate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



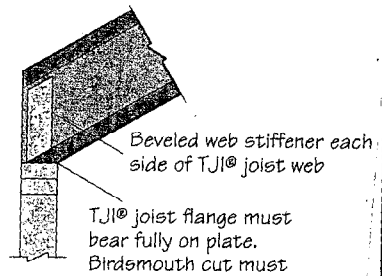
R14



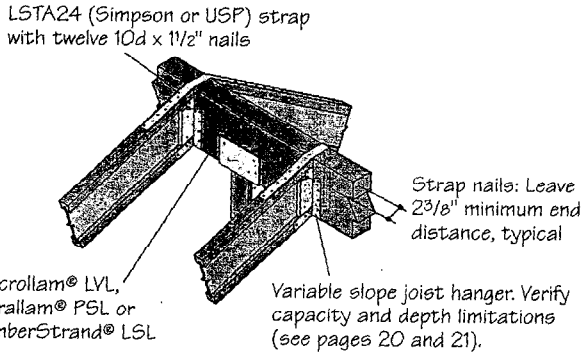
O

Birdsmouth Cut

Allowed at low end of joist only

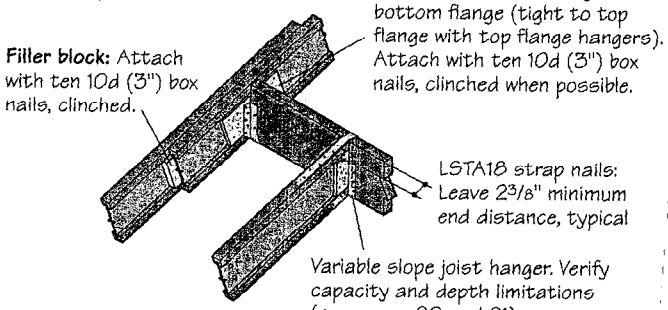


BC



H5

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

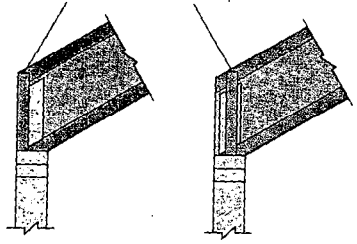


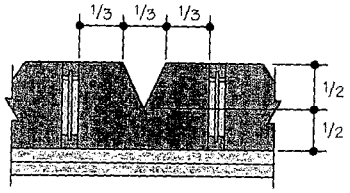
H6

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

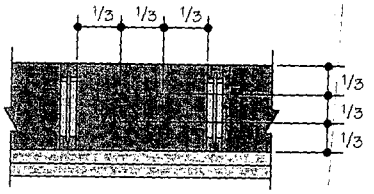
Shear Blocking and Ventilation Holes—Roof Only

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 R75.
- **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

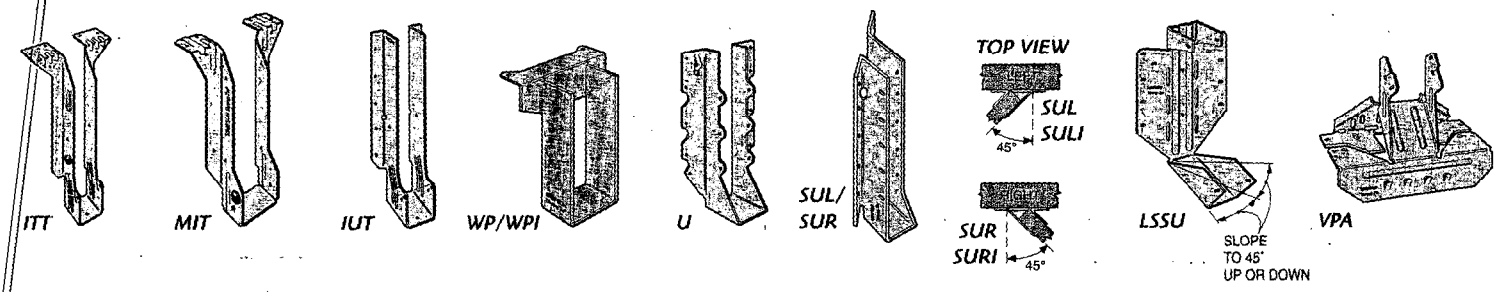
- Details H5 and R14 may require additional blocking for shear transfer.

Filler and Backer Block Sizes

TJI®/Pro™ Depth	120TS 9 1/2" or 11 7/8"	120TS 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.

Framing Connectors (Simpson Strong-Tie®)



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 1½" nails.
Header: 10d (3") common nails.
Top flange hangers require 10d x1½" 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 1½" nails.
Header: 10d (3") common nails.
Top flange hangers require 10d x 1½" 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"	LSSU125	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 1½" nails.
Header: 10d (3") common nails.

Face Mount Skewed 45° Joist Hanger

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

Joist: 10d x 1½" nails.
Header: 16d (3½") 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 1½" nails.
Header: 16d (3½") common nails.

Table A Maximum Load (lbs) for Top Flange Hangers

Header Material	MIT	WP/WPI
4" 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.

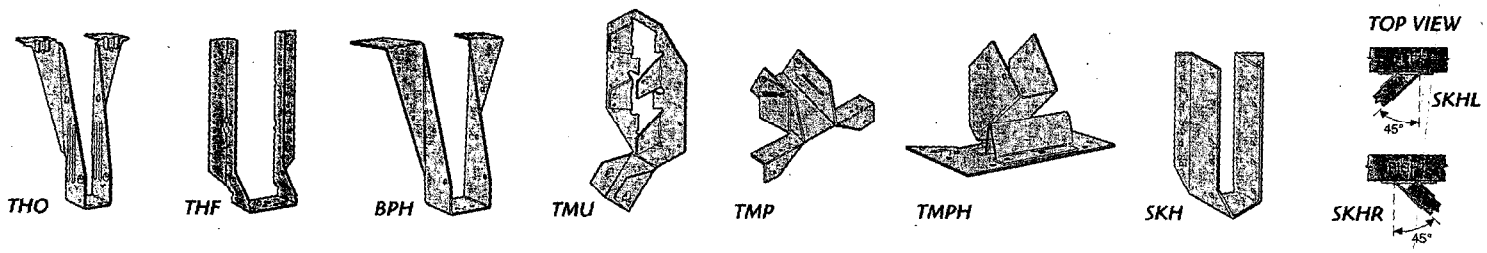
Contact your Trus Joist representative for assistance with other hanger or support conditions.

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" (1½" for ITT hangers).
- Minimum header width for double joist top flange hangers is 3".
- Minimum header width for face mount hangers is 1¾".



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"	THO35118	
	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" - 11 7/8" - 14"	SKH1720-R or SKH1720-L
	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

Design Properties (100% load duration)

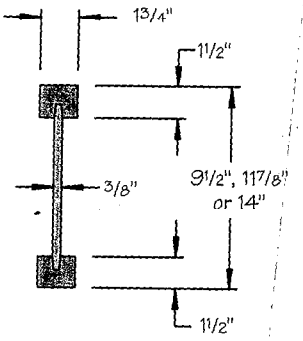
TJI®/Pro™ 120TS	Basic Properties				Reaction Properties	
	Joist Weight (lbs/ft)	Maximum Resistive Moment (ft-lbs)	Joist Only EI x 10^6 (in²-lbs)	Maximum Vertical Shear (lbs)	Maximum End Reaction (lbs)	Maximum Intermediate Reaction (lbs) No Web Stiffeners
9½"	2.4	2,570	141	1,120	1,120	2,480
11⅞"	2.7	3,430	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 1¾" at ends and 3½" 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 1¾" x 1½" TimberStrand® LSL with ⅜" 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
½" plywood	1.7 psf	1.5 psf
⅝" plywood	2.0 psf	1.8 psf
¾" plywood	2.5 psf	2.3 psf
1⅛" plywood	3.8 psf	3.4 psf
½" OSB	1.8 psf	1.7 psf
⅝" OSB	2.2 psf	2.0 psf
¾" OSB	2.7 psf	2.5 psf
1⅛" 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 (⅜" thick)	15 psf

Roll or Batt Insulation (1" thick)

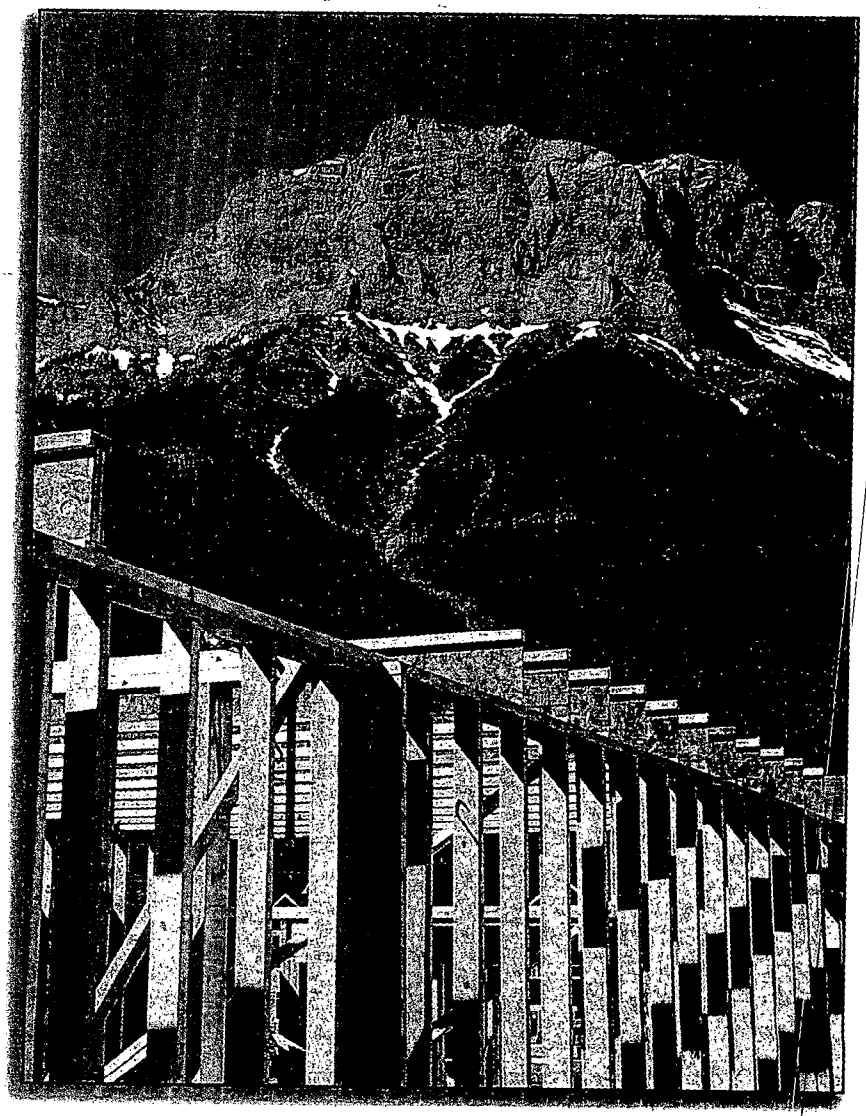
Rock wool	0.2 psf
Glass wool	0.1 psf

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
¾" ceramic or quarry tile	10.0 psf
Gypsum concrete (¾")	6.5 psf

Ceilings

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

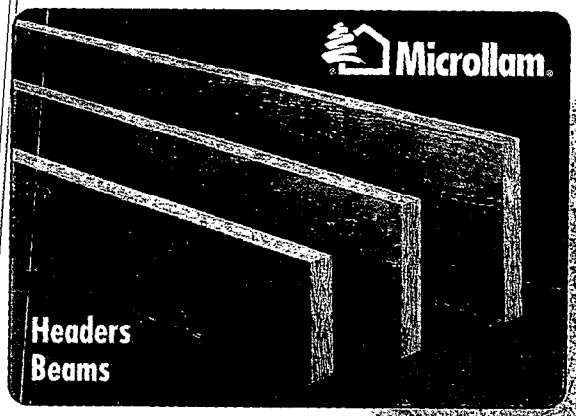


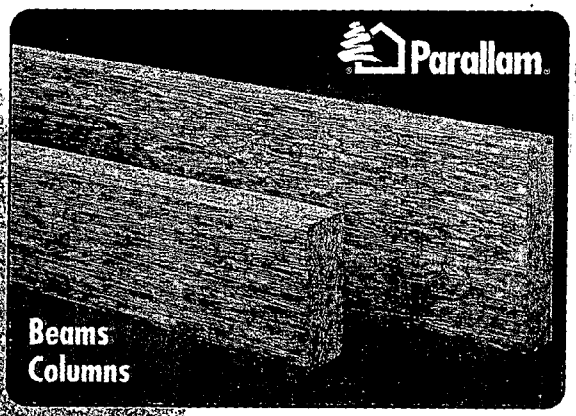
Changing the Way You Build™

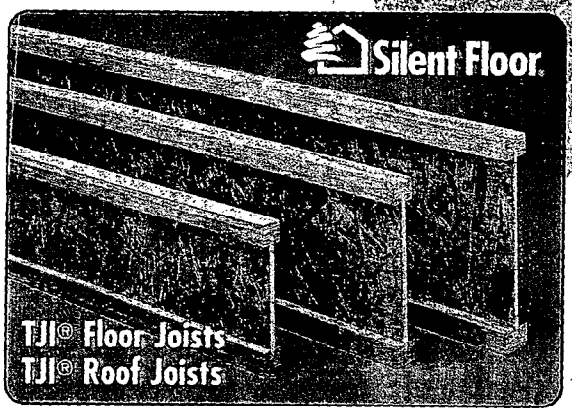
Since the 1960s, builders and specifiers have relied on quality products from Trus Joist. Cutting-edge research and development have resulted in a product line that gives you the superior support you need in a structure, while our skilled sales and technical staff provides the additional support you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

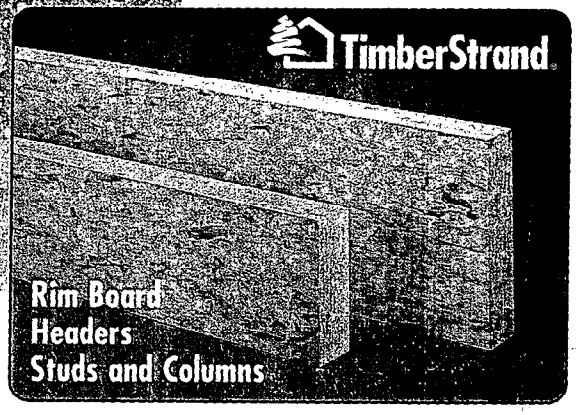
Consistent, top quality Trus Joist building products use more and waste less of precious timber resources, resulting in buildings that are structurally—and environmentally—sound. Homes built on the exceptional strength and consistency of Microllam® LVL, Parallam® PSL, TimberStrand® LSL and Silent Floor® 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

200 E. Mallard Drive, Boise, Idaho 83706
1-800-628-3997

Tom Deming, President

Trus Joist® A Weyerhaeuser Business

1-800-628-3997

www.trusjoist.com

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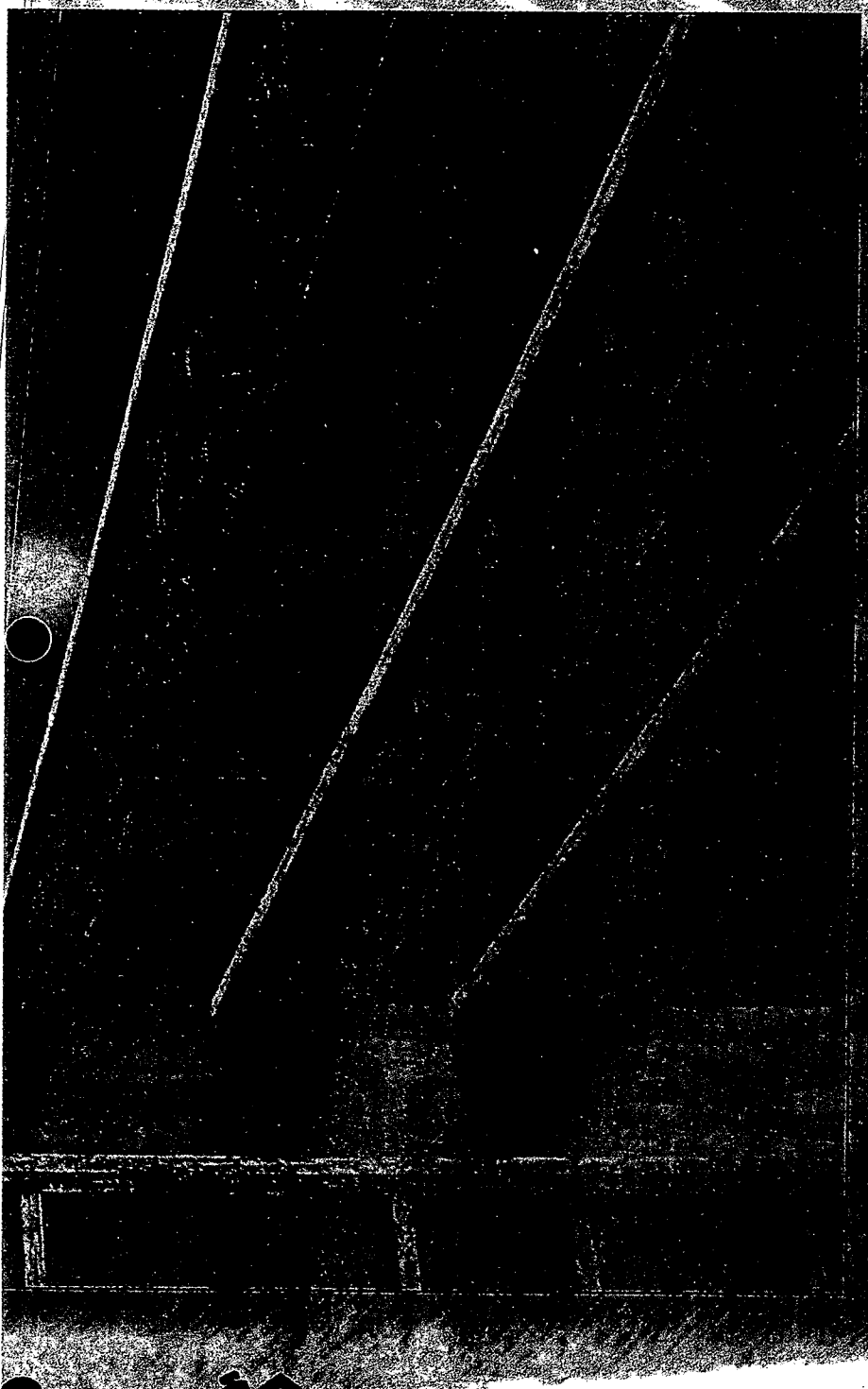

SPECIFIER'S GUIDE

TJI®/Pro™ 100TS & 130 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

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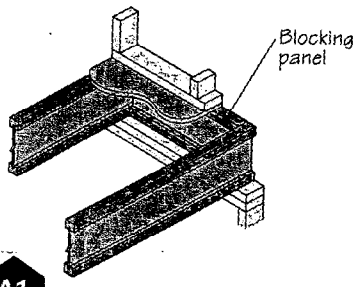
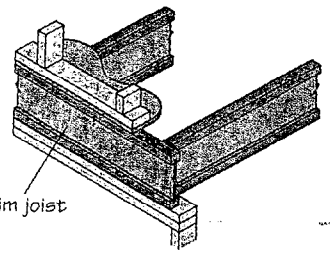
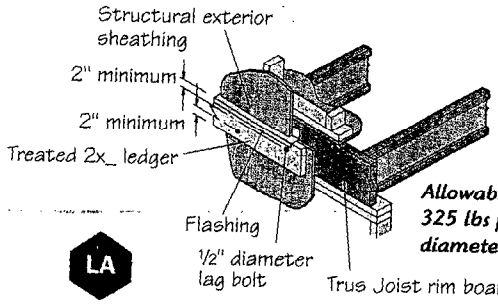


A1



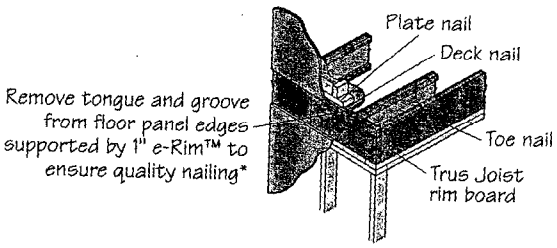
A2

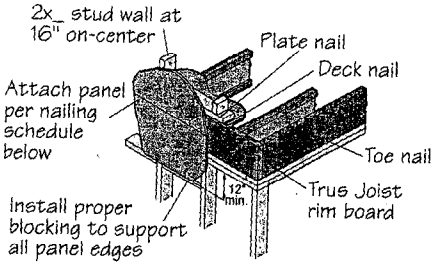
Exterior Deck Attachment



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

LA





For information on lateral load capacities refer to current Trus Joist rim board literature

A3 A3.1 A3.2 A3.3

** Trimming edges of panels used with 1 1/8" or thinner rim board recommended by ICBO Evaluation Services, Inc.*

A3.4

Rim Board Installation

Specifications		A3	A3.1(1)	A3.2(1)	A3.3(1)	A3.4(1)
Rim Board Thickness		1" or 1 1/4"	1"	1 1/4"	1 1/4"	1 1/4"
Plate Nail – 16d (3 1/2") box		16" o.c.	16" o.c.	12" o.c.	8" o.c.	12" o.c.
Deck Nail – 8d (2 1/2") common		6" o.c.	6" o.c.	6" o.c.	6" o.c.	6" o.c.
Toe Nail – 10d (3") box		6" o.c.	6" o.c.	6" o.c.	4" o.c.	6" o.c.
Sill Plate Anchor Bolt		1/2" dia. at 6' o.c.	1/2" dia. at 6' o.c.	1/2" dia. at 6' o.c.	5/8" dia. at 6' o.c.	5/8" dia. at 4' o.c.
Wall Framing – Exterior Face	Sheathing	Per code	Per code	Per code	3/8" structural 1 sheathing at corners and every 25' o.c. 1/2" fiberboard in all other areas(2)	3/8" structural 1 sheathing in all areas(3)
	Boundary Nailing				8d common at 6" o.c.	8d common at 4" o.c.
	Intermediate Nailing				8d common at 12" o.c.	8d common at 12" o.c.
	Max. Wall Opening Height				5'-4"(4)	5'-4"(4)
	Max. Wall with Full Height Sheathing				70%	70%
Wall Framing – Interior Face	Sheathing	Per code	Per code	Per code	1/2" gypsum	1/2" gypsum
	Boundary Nailing				5d cooler at 7" o.c.	5d cooler at 7" o.c.
	Intermediate Nailing				5d cooler at 10" o.c.	5d cooler at 10" o.c.
Hold-Downs (if required)		Per code	16" o.c. within 10' of corners(5)	16" o.c. within 6' of corners(5)	16" o.c. within 4' of corners(5)	N.A.

(1) All sheathing shall be properly blocked and nailed.

(2) Detail A3.3 shall be a segmented wall, constructed per the 1995 SBC Wood Frame Construction Manual.

(3) Sheathing shall be continuous over all plate-to-plate and plate-to-rim board interfaces and may butt together at mid-depth of rim board as shown in A3.4. At foundation, fasten the bottom edge of the sheathing to the sill plate.

(4) One 6'-8" standard door opening is allowed.

(5) If required, hold-downs shall be Simpson Strong-Tie® CS20 straps attached with four 8d common nails at each end or equivalent. As an alternative to hold-down straps, wall sheathing may be attached as shown in A3.4 (refer to footnote 3).

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	2000 plf
TJI® rim joist	2000 plf
TimberStrand® LSL – 1 1/4"	4250 plf
TJ-Strand® rim board – 1 1/4"	4250 plf
e-Rim™ – 1"	4250 plf

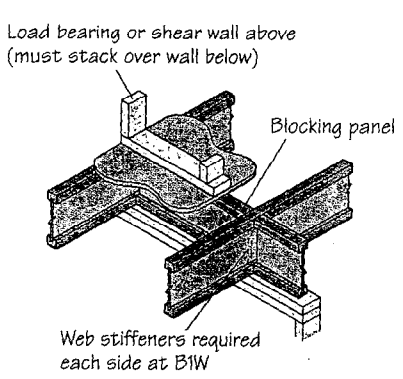
Loads may not be increased for duration of load.

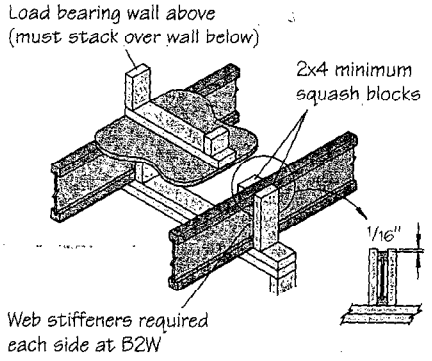
Bracing per code shall be carried to the foundation.

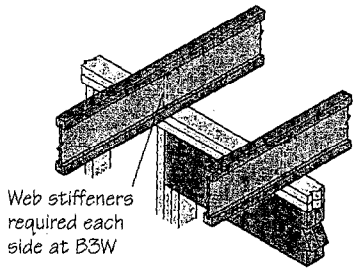
Nailing Requirements

- **TJI® joists at bearings:** Two 8d (2 1/2") box nails (1 each side), 1 1/2" minimum from end.
- **Blocking panels or rim joist to bearing plate:**
  TJI® blocking panels or rim joist: Equivalent to toe nail schedule.
- **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™ 130TS rim joist: 16d (3 1/2") box nails, one each at top and bottom flange.
- **2x4 minimum squash blocks:** 10d (3") box nails, one each at top and bottom flange.

Intermediate Bearing – No Load Bearing Wall Above

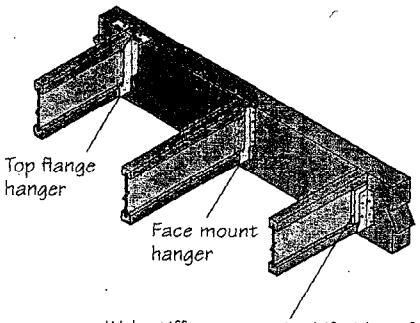




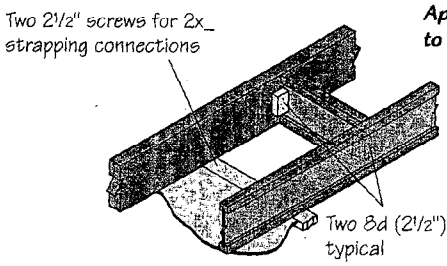


Blocking panels may be required with shear walls above or below – see detail B1

B1 B1W B2 B2W B3 B3W



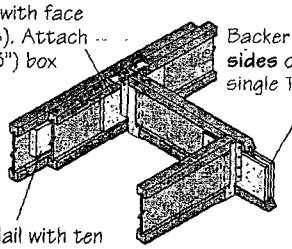
H1



Apply subfloor adhesive to all contact surfaces

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). Attach with ten 10d (3") box nails, clinched when possible.

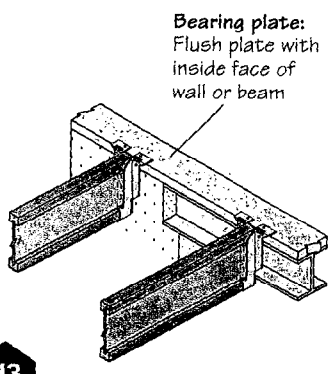


Filler and Backer Block Sizes

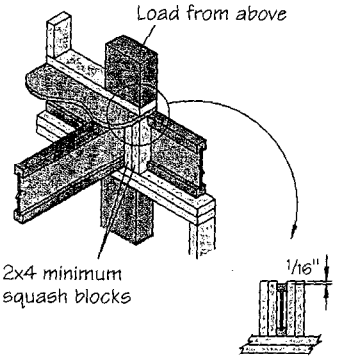
TJI®/Pro™ Depth	100TS 9½" or 11⅞"	130 9½" or 11⅞"	130 14" or 16"
Filler Block* (Detail H2)	2x6	2x6 + ½" sheathing	2x8 + ½" sheathing
Cantilever Filler (Detail E4)	2x6 4'-0" long	2x6 + ½" sheathing 4'-0" long	2x10 + ½" sheathing 6'-0" long
Backer Block* (Detail F1 or H2)	⅝" or ¾"	1" net	1" net

* If necessary, increase filler and backer block height for face mount hangers. 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***

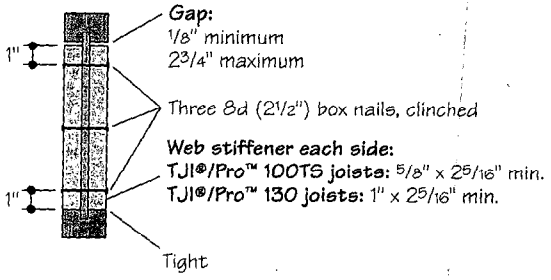


H3



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

Web Stiffener Attachment



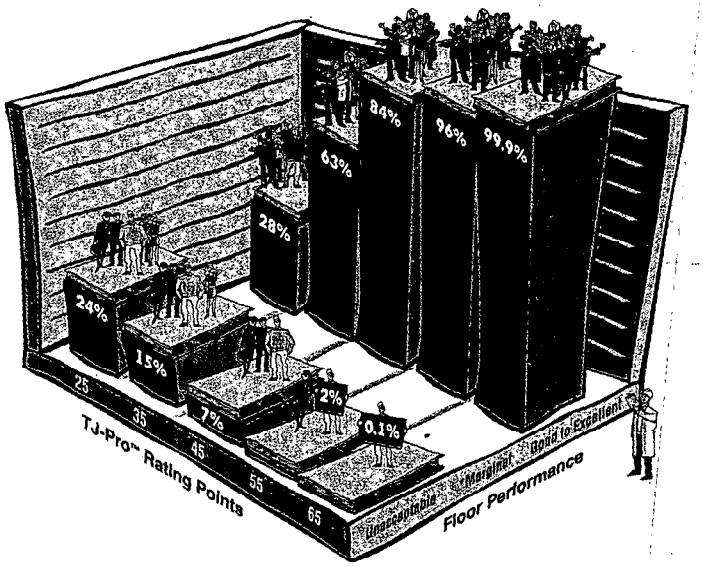
W ***Web stiffener material shall be PS1-95 or PS2-92 sheathing, face grain vertical***

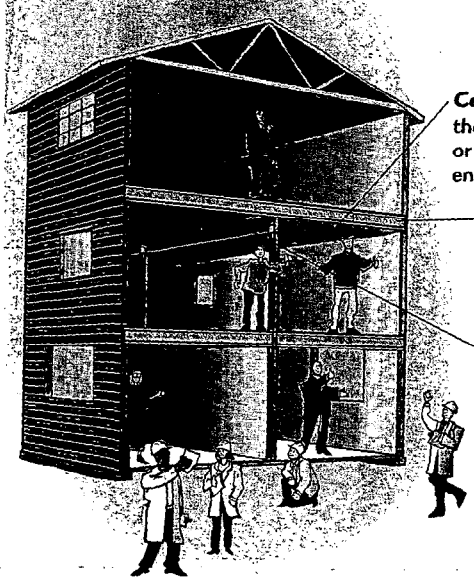
See General Notes on page 6

TJ-Pro™ Rating System

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





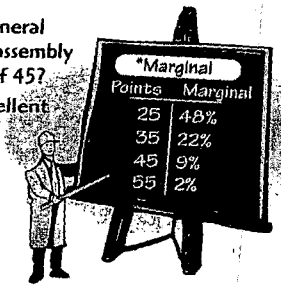
Ceiling – A ceiling directly applied to the bottom edge of the floor members—or equivalent strapping—is a performance enhancement.

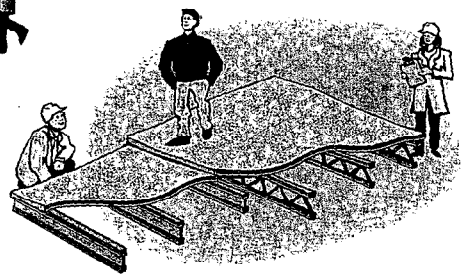
Continuity – Continuous joists over several supports generally perform better than simple spans. Care must be taken if the joists continue into another occupancy.

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.

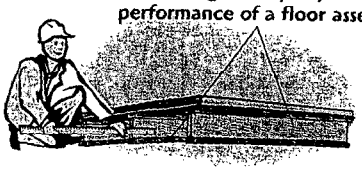
Example: How does the general public "feel" about a floor assembly with a Performance Value of 45?

- 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.



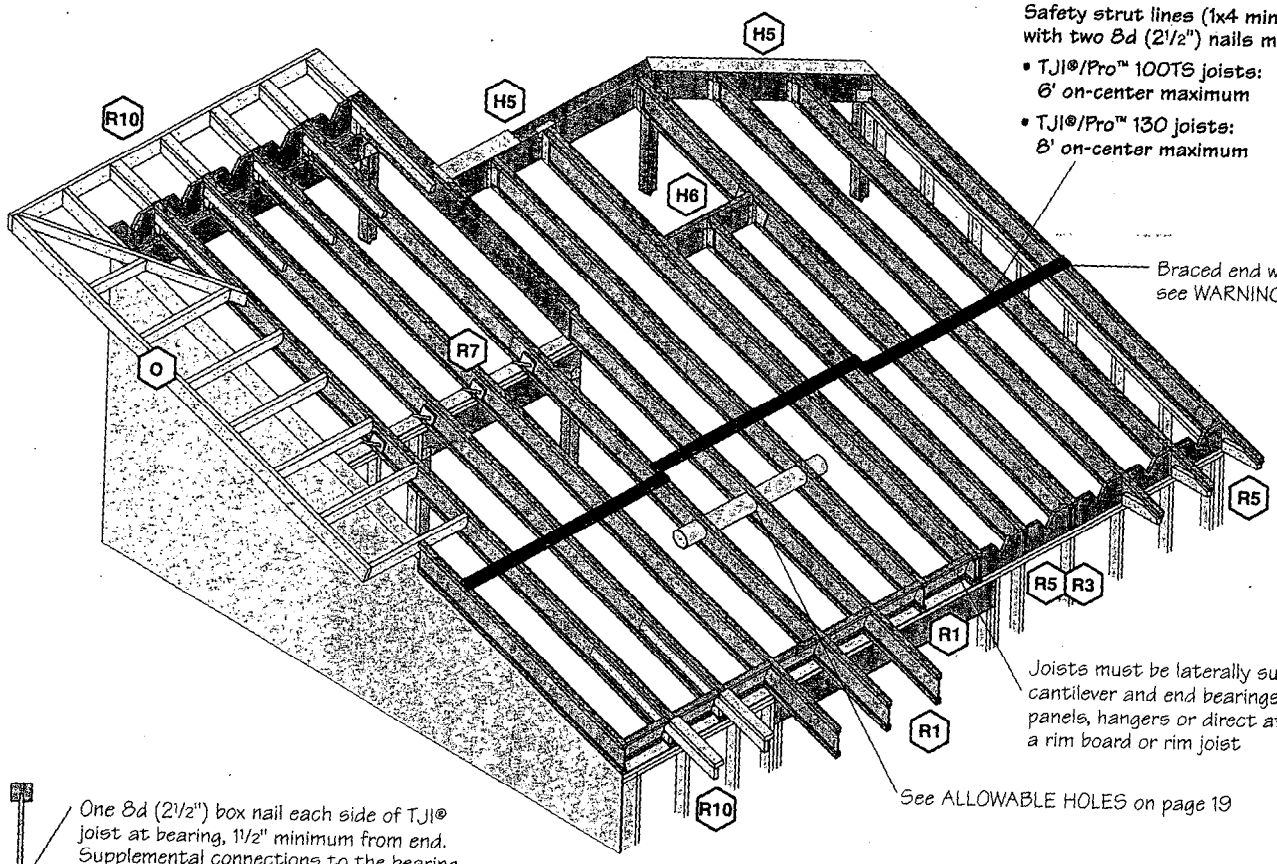
ince the mid 1960s, Trus Joist has been involved in evaluating floor erformance. Our early observations suggested that the minimum leflection criteria used by the industry (L/360 or less under live load) rovided little assurance of an acceptable floor. In an effort to improve erformance, we began recommending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

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

the early 1990s, Trus Joist began a research project to develop the esired design methodology for evaluating floor performance, including onsideration of dynamic response. Our objective was to combine the ndings of our research and 30 years of experience into a tool that can e 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.



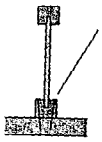
Safety strut lines (1x4 minimum). Fasten with two 8d (2½") nails minimum.

- TJI®/Pro™ 100TS joists: 6' on-center maximum
- TJI®/Pro™ 130 joists: 8' on-center maximum

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 ALLOWABLE HOLES on page 19

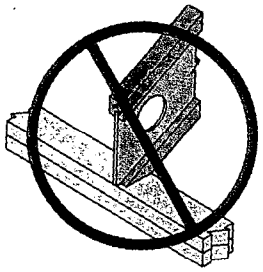


One 8d (2½") box nail each side of TJI® joist at bearing, 1½" minimum from end. Supplemental connections to the bearing plate may be required for slopes exceeding 4" per foot.

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

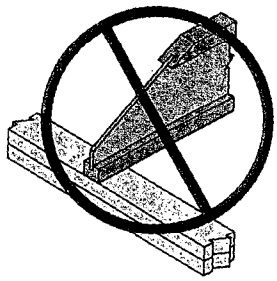
These Conditions Are NOT Permitted

DO NOT cut holes too close to support

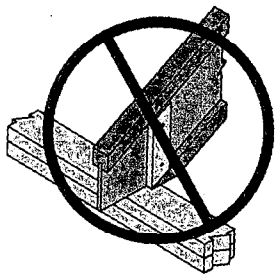


Refer to ALLOWABLE HOLES on page 19 for minimum distance from support

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

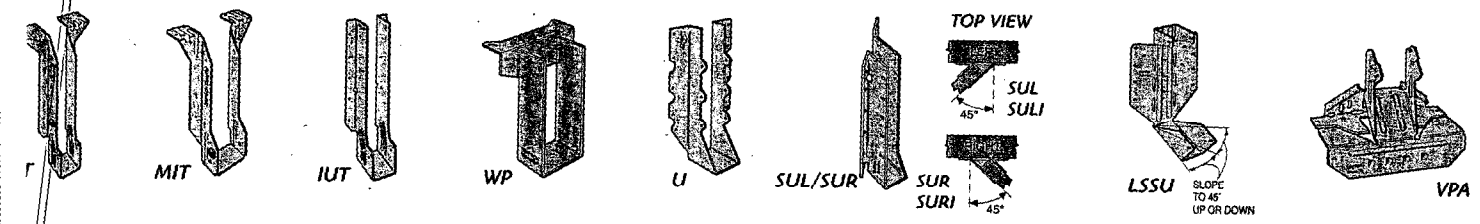
1. Determine appropriate LIVE and DEAD LOAD and load duration factor.
2. If your slope is 6"/12" or less use the LOW slope column. If it is between 6"/12" and 12"/12" use the HIGH column.
3. Select appropriate span.
4. Select TJI® joist and on-center spacing.

O.C. Spacing	Depth	TJI®/Pro™	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
12"	9 1/2"	100TS	18'-5"	16'-5"	17'-7"	15'-7"	17'-8"	15'-10"	16'-0"	15'-3"	15'-9"	14'-4"	14'-6"	13'-7"
		130	20'-2"	18'-0"	19'-2"	17'-0"	19'-4"	17'-3"	18'-7"	16'-8"	17'-4"	15'-8"	16'-5"	14'-11"
	11 7/8"	100TS	22'-1"	19'-8"	21'-0"	18'-8"	21'-2"	18'-11"	20'-1"	18'-3"	18'-2"	17'-2"	16'-9"	16'-3"
		130	24'-1"	21'-6"	22'-11"	20'-4"	23'-1"	20'-8"	22'-2"	19'-11"	20'-9"	18'-9"	19'-5"	17'-10"
	14"	130	27'-5"	24'-5"	26'-1"	23'-2"	26'-3"	23'-6"	25'-3"	22'-8"	23'-3"	21'-4"	21'-6"	20'-3"
	16"	130	30'-5"	27'-1"	29'-0"	25'-8"	29'-1"	26'-1"	27'-10"	25'-2"	25'-3"	23'-8"	23'-3"	22'-6"
16"	9 1/2"	100TS	17'-4"	15'-5"	16'-6"	14'-8"	16'-7"	14'-10"	15'-10"	14'-4"	14'-5"	13'-6"	13'-3"	12'-9"
		130	18'-11"	16'-11"	18'-0"	16'-0"	18'-1"	16'-3"	17'-5"	15'-8"	16'-3"	14'-9"	15'-4"	14'-0"
	11 7/8"	100TS	20'-9"	18'-6"	19'-9"	17'-6"	19'-4"	17'-9"	18'-4"	17'-2"	16'-7"	15'-0"	15'-3"	14'-10"
		130	22'-7"	20'-2"	21'-7"	19'-1"	21'-8"	19'-5"	20'-10"	18'-9"	19'-2"	17'-7"	17'-8"	16'-9"
	14"	130	25'-9"	22'-11"	24'-6"	21'-9"	24'-7"	22'-1"	23'-5"	21'-4"	21'-3"	20'-0"	19'-7"	18'-11"
	16"	130	28'-7"	25'-6"	27'-2"	24'-2"	26'-10"	24'-6"	25'-5"	23'-8"	23'-0"	22'-2"	21'-3"	20'-6"
19.2"	9 1/2"	100TS	16'-0"	14'-4"	15'-3"	13'-6"	15'-0"	13'-9"	14'-2"	13'-3"	12'-10"	12'-4"	11'-10"	11'-6"
		130	17'-6"	15'-8"	16'-8"	14'-10"	16'-9"	15'-0"	16'-1"	14'-6"	14'-11"	13'-8"	13'-9"	12'-11"
	11 7/8"	100TS	19'-2"	17'-2"	17'-11"	16'-3"	17'-4"	16'-5"	16'-4"	15'-7"	14'-10"	14'-3"	13'-8"	13'-3"
		130	20'-11"	18'-8"	19'-11"	17'-8"	20'-0"	18'-0"	18'-11"	17'-4"	17'-2"	16'-4"	15'-10"	15'-4"
	14"	130	23'-10"	21'-3"	22'-8"	20'-2"	22'-2"	20'-5"	20'-11"	19'-9"	19'-0"	18'-3"	17'-6"	16'-11"
	16"	130	26'-5"	23'-7"	24'-10"	22'-4"	24'-0"	22'-8"	22'-8"	21'-8"	20'-7"	19'-10"	18'-7"	18'-4"

General Notes

- Table is based on:
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Minimum roof surface slope of 1/4" in 12".
  - Horizontal clear distance between supports (1 3/4" minimum end bearing).
- Total load limits joist deflection to L/180.
- Live load is based on joist deflection of L/240.
- Support beam or wall at high end is required (ridge board applications do not provide adequate support).
- A code-allowed increase for repetitive member use has been included.
- Spans shown assume no web stiffeners at intermediate bearings (3 1/2").

Framing Connectors (Simpson Strong-Tie®)



ingle Joist Hanger

	Depth	TJI®/Pro™	Hanger
Top Flange Hanger	9 1/2"	100TS	ITT9.5
		130	ITT359.5
	11 7/8"	100TS	ITT11.88
		130	ITT3511.88
	14"	130	ITT3514
	16"	130	MIT3516
Face Mount Hanger	9 1/2"	100TS	IUT9
		130	IUT3510
	11 7/8"	100TS	IUT11
		130	IUT3512
	14"	130	IUT3514
	16"	130	IUT3516

t: 10d x 1 1/2" nails.
Nails into bottom flange of joist must be angled.

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

Double Joist Hanger

	Depth	TJI®/Pro™	Hanger	Maximum Load (lbs) Floor
Top Flange Hanger	9 1/2"	100TS	MIT49.5	See Table A
		130	WP359.5-2	
	11 7/8"	100TS	MIT411.88	
		130	MIT3511.88-2	
	14"	130	MIT3514-2	
	16"	130	WP3516-2	
Face Mount Hanger	9 1/2"	100TS	U410	1560
		130	U3510-2	1560
	11 7/8"	100TS	U410	1560
		130	U3512-2	1780
	14"	130	U3512-2	1780
	16"	130	U3512-2	1780

- 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" if supported by TJI® joist headers or single 2x_ nailers.

Variable Slope Seat Joist Hanger

Depth	TJI®/Pro™	Hanger	Sloped Only	Skewed or Sloped and Skewed
9 1/2" and 11 7/8"	100TS	***LSSUI25***	1110	995
	130	***LSSUI35***	1110	995

- LSSU hangers can be field adjusted for slopes and skews of up to 45 degrees.
- Loads may be increased 15% max. for short term roof loading.
- Supplemental lateral restraint is necessary for 14" and 16" deep TJI® joists. Contact your Trus Joist representative for assistance.

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

Header: 10d (3") common nails.

ıce Mount Skewed 5° Joist Hanger

Depth	TJI®/Pro™	Hanger
/2" and 11/8"	100TS	***SURI9 or SULI9***
	130	***SURI3510/12 or SULI3510/12***
4" and 16"	130	***SURI3514/20 or SULI3514/20***

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

Variable Slope Seat Connector

TJI®/Pro™	Connector	Maximum Load (lbs)
100TS	VPA25	1050
130	VPA35	1230

- VPA connectors may be used only on slopes of 3"/12" through 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	MIT	WP
Beam	1565	2000
TJI® Joist Header	1230	2030
Wood Nailer	1570	2500

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

ıneral Notes

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

ıtact your Trus Joist representative for assistance with other hanger or ɔort conditions.

d italic hangers require web stiffeners.

ome hangers shown have less capacity than that of the TJI® joists. The joist anger capacity must be checked for applications beyond the floor span ables or when maximum loads are given.

ll hangers are assumed to resist downward loads (downward roof loads for SSU or TMU hangers).

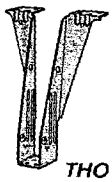
lse sloped seat hangers when TJI® joist slope exceeds 3/8"/12".

eave 1/16" clearance (1/8" maximum) between the end of the supported ɔist and the header or hanger.

ll all round, dimple and positive angle nail holes. Capacities will vary with fferent nailing criteria or other support conditions.

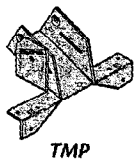
Header Requirements

- TJI® joist headers or beams are 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 13/4".


THO


THF


TMU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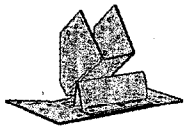
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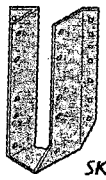

SKH

Single Joist Hanger

	Depth	TJI®/Pro™	Hanger
Top Flange Hanger	9 1/2"	100TS	THO17950
		130	THO23950
	11 7/8"	100TS	THO17118
		130	THO23118
	14"	130	THO23140
	16"	130	THO23160
Face Mount Hanger	9 1/2"	100TS	THF17925
		130	THF23925
	11 7/8"	100TS	THF17112
		130	THF23118
	14"	130	THF23140
	16"	130	THF23160

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

Header: 10d (3") common nails.
Use 10d x 1 1/2" for top flange hangers.

Double Joist Hanger

	Depth	TJI®/Pro™	Hanger	Maximum Load (lbs) Floor
Top Flange Hanger	9 1/2"	100TS	THO35950	See Table A
		130	THO23950-2	
	11 7/8"	100TS	THO35118	
		130	THO23118-2	
	14"	130	THO23140-2	
	16"	130	THO23160-2	
Face Mount Hanger	9 1/2"	100TS	THF35925	1345
		130	THF23925-2	1575
	11 7/8"	100TS	THF35112	1795
		130	THF23118-2	1800
	14"	130	THF23140-2	2370
	16"	130	THF23160-2	2845

- 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 (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

Depth	TJI®/Pro™	Hanger	Skewed or Sloped and Skewed
9 1/2" and 11 7/8"	100TS	***TMU179***	1165
	130	***TMU23***	1345

- 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 (up to 30 degrees for TMU23).
- Loads may be increased 15% max. for short term roof loading.
- Supplemental lateral restraint is necessary for 14" and 16" 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

Depth	TJI®/Pro™	Hanger
9 1/2" and 11 7/8"	100TS	***SKH1720R or SKH1720L***
	130	***SKH2320R or SKH2320L***
14" and 16"	130	***SKH2324R or SKH2324L***

Joist: 10d x 1 1/2" nails 16d (3 1/2") common nails for SKH410L/R.

Header: 10d (3") common nails; 16d (3 1/2") common nails for SKH410L/R.

Variable Slope Seat Connector

TJI®/Pro™	Connector	Maximum Load (lbs)
100TS	TMP175	1150
	TMPH175	1945
130	TMP23	1785
	TMPH23	1945

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

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

Header: 10d (3") common nails.

Table A
Maximum Load (lbs) for Top Flange Hangers

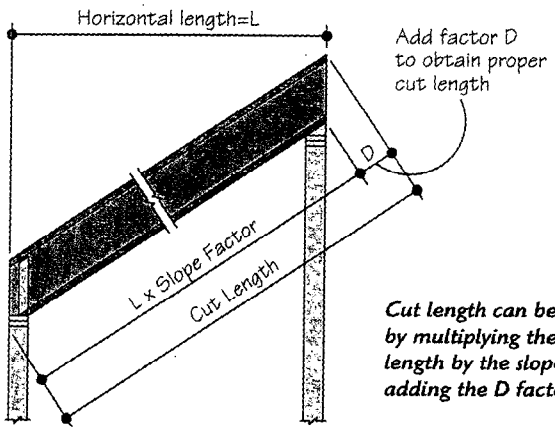
Header Material	THO	THO-2
Beam	2050	3535
TJI® Joist Header	2050	2050
Wood Nailer	1360	1455

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

Refer to page 20 for General Notes

Cut Length Calculation

TJI® Joist Cut Length Calculation



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"	16"
2 1/2 in 12	2"	2 1/2"	3"	3 3/8"
3 in 12	2 3/8"	3"	3 1/2"	4"
3 1/2 in 12	2 7/8"	3 1/2"	4 1/8"	4 3/4"
4 in 12	3 1/4"	4"	4 3/4"	5 3/8"
4 1/2 in 12	3 5/8"	4 1/2"	5 1/4"	6"
5 in 12	4"	5"	5 7/8"	6 3/4"
6 in 12	4 3/4"	6"	7"	8"
7 in 12	5 5/8"	7"	8 1/4"	9 3/8"
8 in 12	6 3/8"	8"	9 3/8"	10 3/4"
9 in 12	7 1/8"	9"	10 1/2"	12"
10 in 12	8"	10"	11 3/4"	13 3/8"
11 in 12	8 3/4"	11"	12 7/8"	14 3/4"
12 in 12	9 1/2"	11 7/8"	14"	16"

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™		Trus Joist Rim Board
	100TS	130(3)	
8d (2 1/2") box	2 1/2"	2"	4"
8d (2 1/2") common	3 1/2"	2"	4"
10d (3"), 12d (3 1/4") box	3"	2"	4"
10d (3"), 12d (3 1/4") common	4 1/2"	3"	4"
16d (3 1/2") common	N.A.(1)	N.A.(1)	6"(2)

(1) When nailing through the wall sill plate and floor sheathing, closest on-center spacing is 4" (1 3/8" max. penetration).

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

(3) Flange connections to be based on specific gravity of 0.50 for lateral and 0.48 for withdrawal.

General Notes

- Maximum spacing of nails is:
  - 18" on-center for TJI®/Pro™ 100TS joists.
  - 24" on-center for TJI®/Pro™ 130 joists.
- 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" 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

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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.

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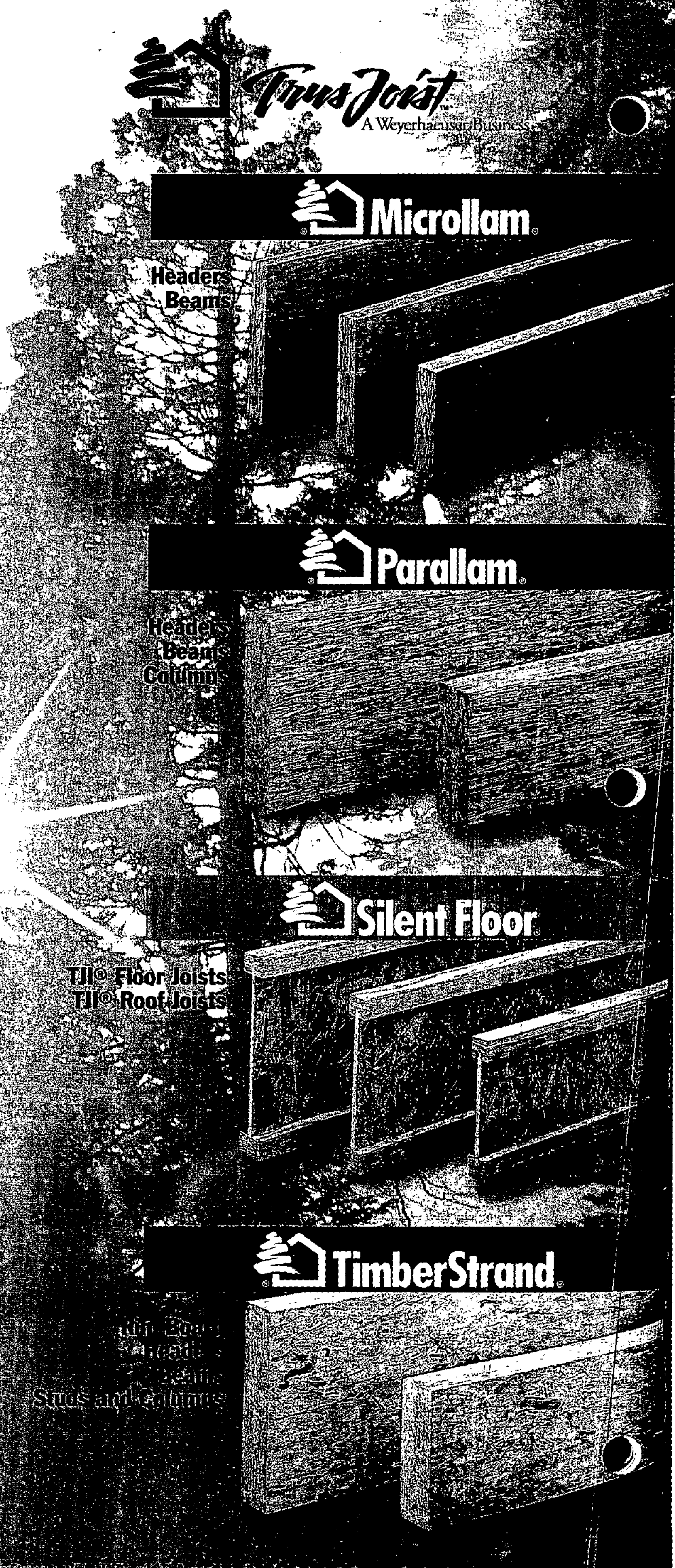

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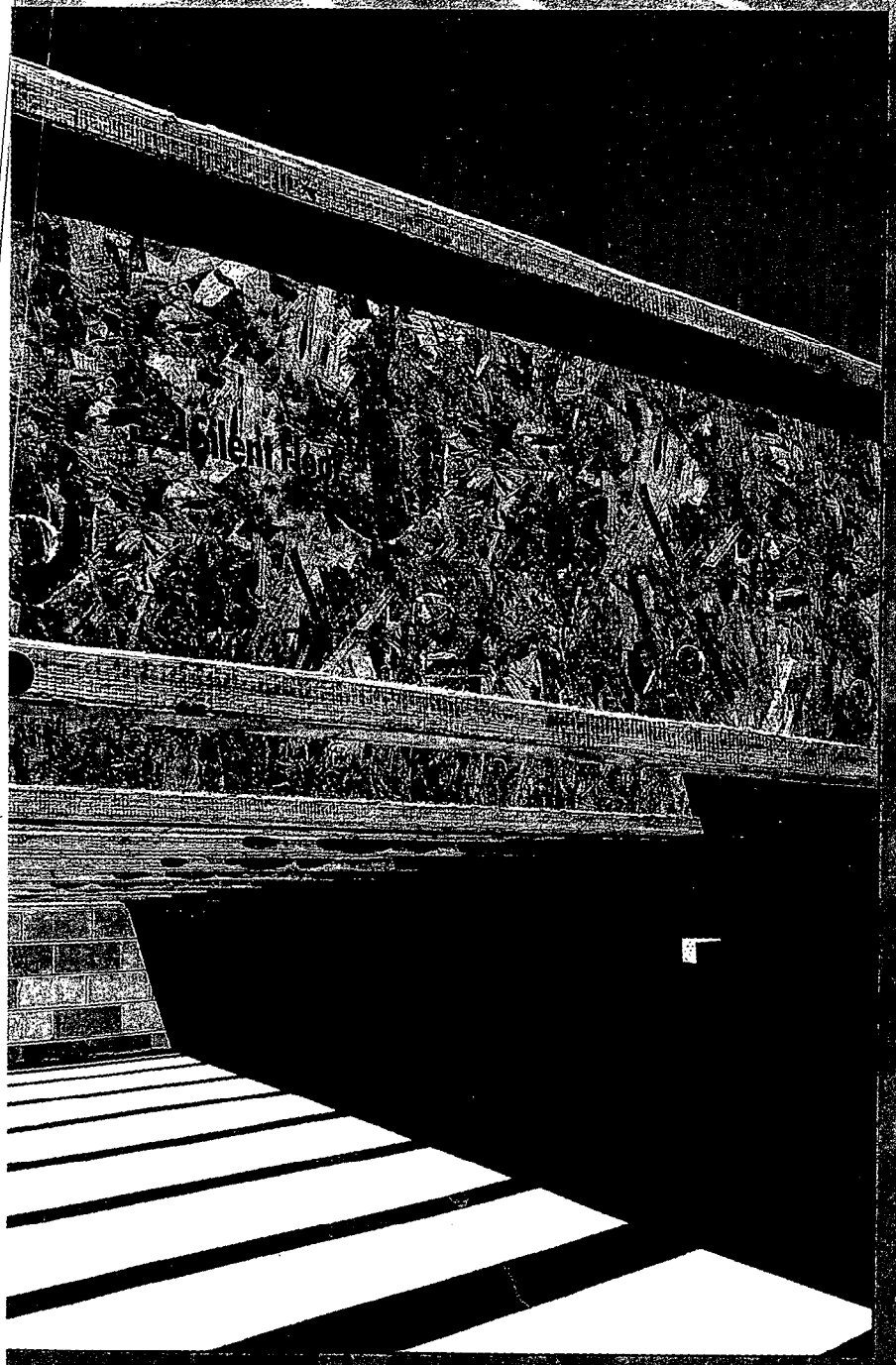

SPECIFIER'S GUIDE

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

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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

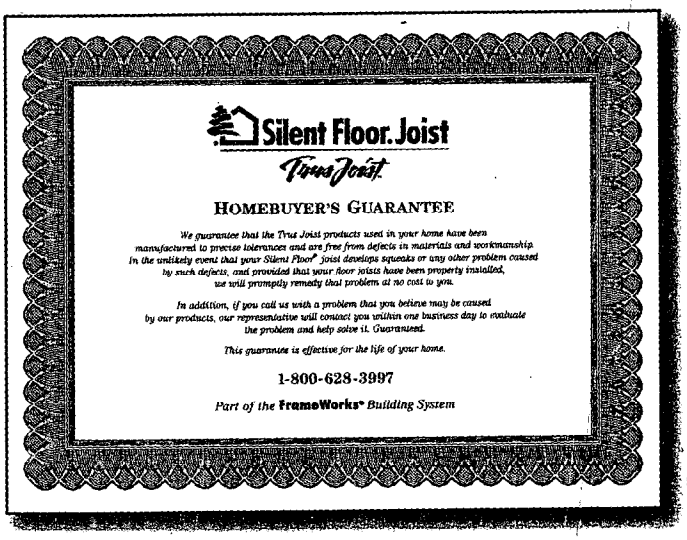

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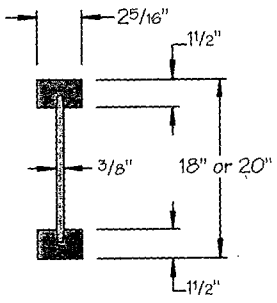
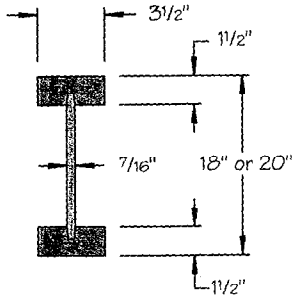
TABLE OF CONTENTS

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.
- Dry-service conditions only.
- 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 lineal 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 x10⁶ (in²-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

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 appropriate 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"	26'-9"(1)
40 PSF LL 15 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 15 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. Shaded 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.

Floor Load Table

How to Use This Table

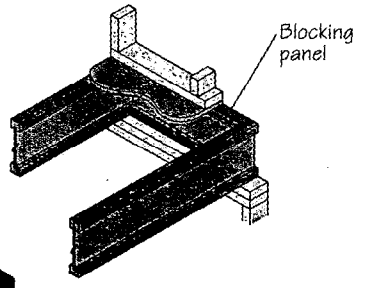
1. Calculate actual total and live load in pounds per lineal foot (plf).
2. Select appropriate JOIST CLEAR SPAN.
3. Scan horizontally to find a TJI® joist that meets or exceeds actual total and live loads.

General Notes

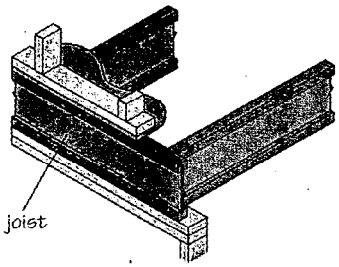
- Table is based on:
  - Uniform loads.
  - No composite action provided by sheathing.
  - More restrictive of simple or continuous span.
- TOTAL LOAD limits joist deflection to L/240.
- LIVE LOAD is based on joist deflection of L/480.
- If live load deflection limit of L/360 is desired, multiply value in LIVE LOAD column by 1.33. The resulting live load shall not exceed the TOTAL LOAD shown.

Floor—100% (PLF)

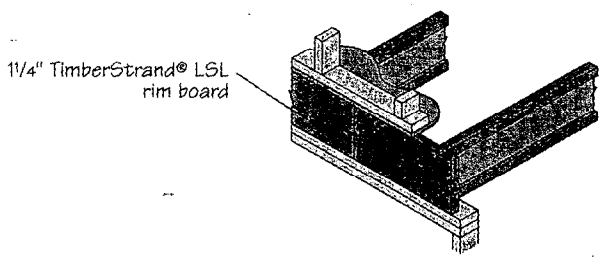
Joist Clear Span	TJI®/Pro™ 350				TJI®/Pro™ 550			
	18"		20"		18"		20"	
	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load	Live Load L/480	Total Load
6		301		301		436		436
8		227		227		329		329
10		182		182		264		264
12		152		152		220		220
14		131		131		189		189
16		114		114		166		166
18		102		102		147		147
20		92		92		133		133
22		83		83		121		121
24	74	76		76	107	111		111
26	59	70		70	86	102		102
28	48	65	61	65	70	95	88	95
30	39	61	50	61	57	89	72	89
32	33	57	42	57	48	83	60	83
34	27	54	35	54	40	78	51	78
36	23	47	30	51	34	69	43	74



A1

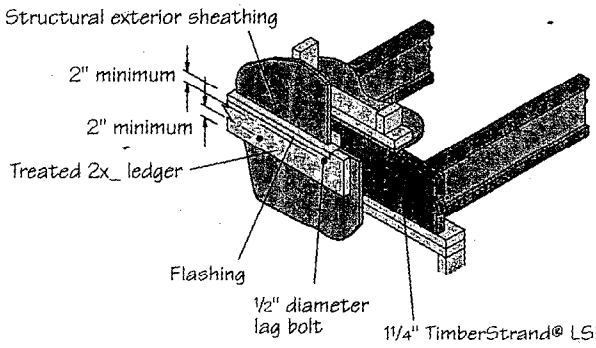


A2 ***Must have 1 3/4" minimum joist bearing at ends***



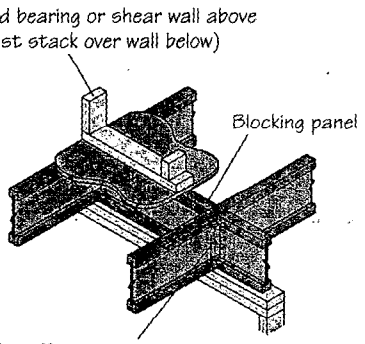
A3

Exterior Deck Attachment

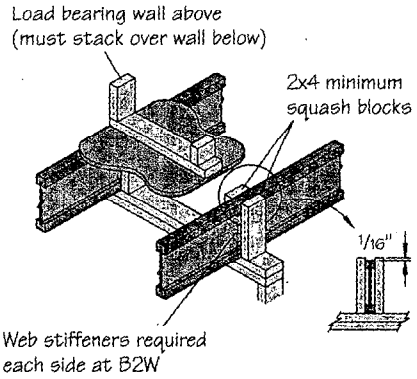


Allowable load is 325 lbs per 1/2" diameter lag bolt

LA

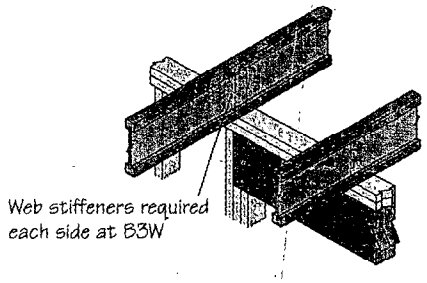


B1 B1W



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

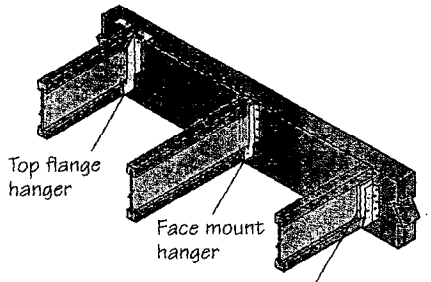
- **At joist ends:** 1 3/4"
- **At intermediate supports:** 3 1/2"

Blocking Panels, Rim Boards or Rim Joists

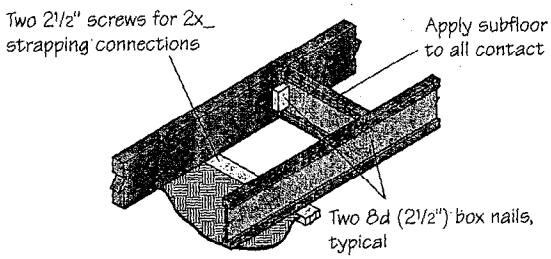
- Check vertical load transfer at bearings.
  Allowable uniform vertical loads:
  TJI® blocking . . . . . 1450 plf
  TJI® rim joist . . . . . 1450 plf
  TimberStrand® LSL – 1 1/4" . . . . . 3450 plf
  Loads may not be increased for duration of load.
- Bracing per code shall be carried to the foundation.
- 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:**
  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.

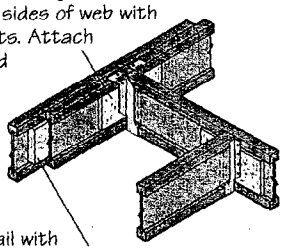


H1



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.

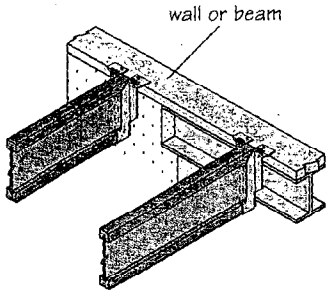
H2 ***With top flange hangers, backer block required only for downward loads exceeding 250 lbs or for uplift conditions***

Filler and Backer Block Sizes

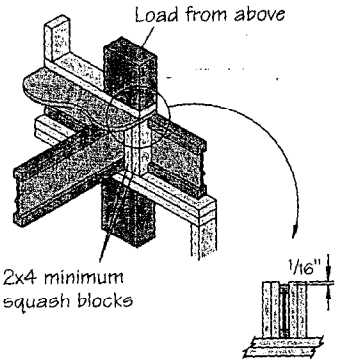
TJI®/Pro™ Depth	350 11⅞" or 14"	550 11⅞" or 14"
Filler Block * (Detail H2)	2x12 + ½" sheathing	Two 2x12
Backer Block * (Detail F1 or H2)	1" net	2x12

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

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



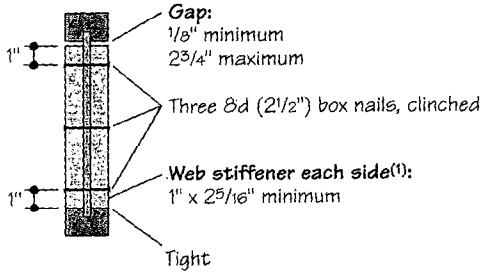
H3



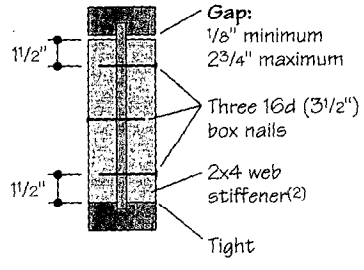
CS ***Use 2x4 minimum squash blocks to transfer load around TJI® joist***

Web Stiffener Attachment

TJI®/Pro™ 350 joists



TJI®/Pro™ 550 joists



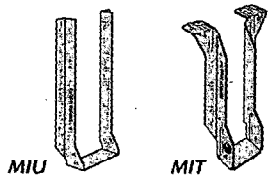
W ***(1) Web stiffener material shall be PS1-95 or PS2-92 sheathing, face grain vertical***
(2) 2x4 construction grade or better

See General Notes on page 5

Simpson Strong-Tie®

Single Joist Hangers

	Depth	TJI®/Pro	Hanger
Face Mount 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



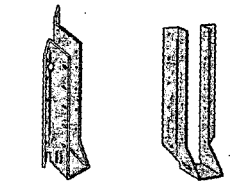
(1) Limit load for hangers supported by TJI® joist headers to 1,230 lbs or subtract 36" from floor span charts.

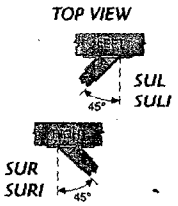
Joist: 10d x 1½" nails.

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	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.

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.

General Notes

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

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

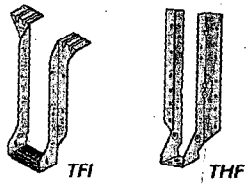
Shaded hangers require web stiffeners.

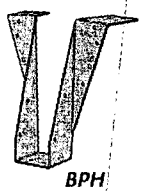
- Some hangers shown have less capacity than that of the TJI® joists. The joist hanger capacity must be checked for applications beyond the floor span tables or when maximum loads are given.
- All hangers are assumed to resist downward loads.
- Leave 1/16" clearance (1/8" maximum) between the end of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

USP Lumber Connectors™

Single Joist Hangers

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



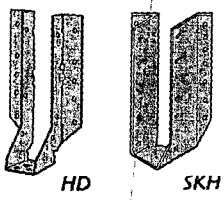


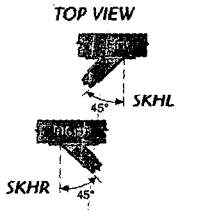
Joist: 10d x 1½" nails.

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	THQ23180-2	See Table A
		550	BPH7180	
	20"	350	THQ23200-2	
		550	BPH7120	
Face Mount	18"	350	THF23160-2	2845
		550	HD7180-2(1)	3810
	20"	350	THF23160-2	2845
		550	HD7180-2	3810





(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	THQ	BPH
Beam	2050	3510
Wood Nailer	1360	2080

Loads in Table A cannot 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.

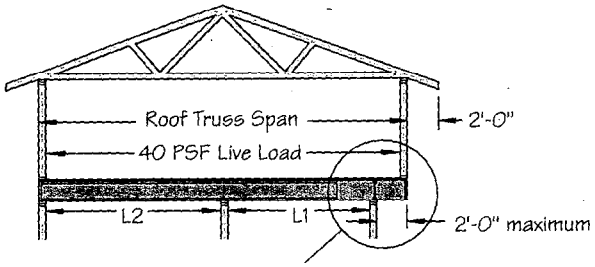
Header: 10d (3") common nails.

Header Requirements

- TJI® joist headers or beams are Trus Joist products, Douglas fir or southern pine species.
- Minimum header width for single joist top flange hangers is 3".
- Minimum header width for double joist top flange hangers is 3".
- Minimum header width for face mount hangers is 1¾".

Cantilever Details

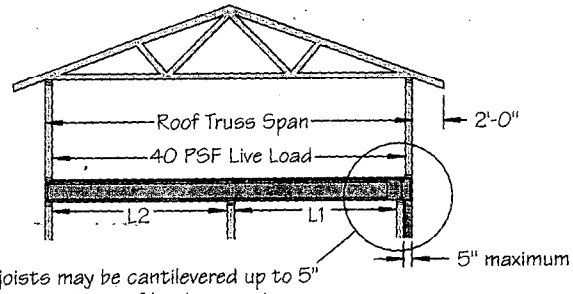
2' Cantilever



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

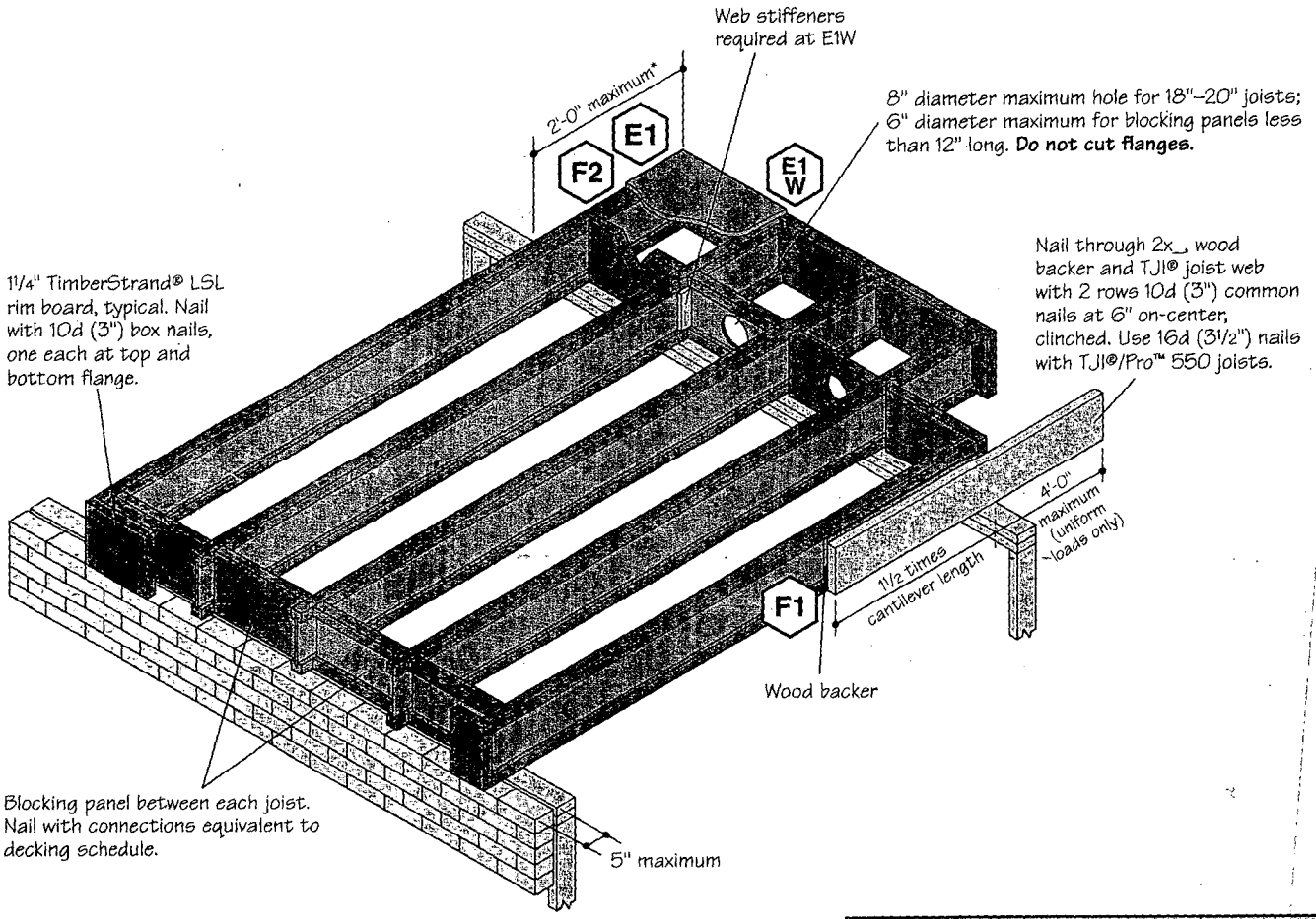
Consult table on page 9 for required reinforcement.

Brick Ledge Cantilever



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

Consult table on page 9 for required reinforcement.

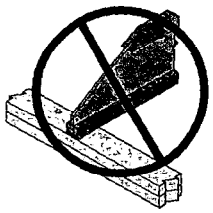


For other conditions, contact your Trus Joist representative.

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

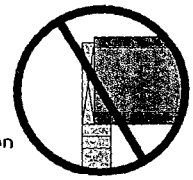
These Conditions Are NOT Permitted

DO NOT bevel cut joist beyond inside face of wall



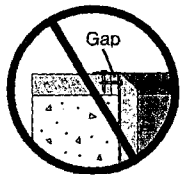
DO NOT use sawn lumber for rim board or blocking

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 and depth.
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. Use LEGEND to determine reinforcement required (if any). Refer to drawing on page 8 for details.

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 our 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			Roof Total Load 45 PSF			Roof Total Load 55 PSF		
			On-Center Joist Spacing								
			16"	19.2"	24"	16"	19.2"	24"	16"	19.2"	24"
2' Maximum	550	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
	560	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	550	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
	560	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

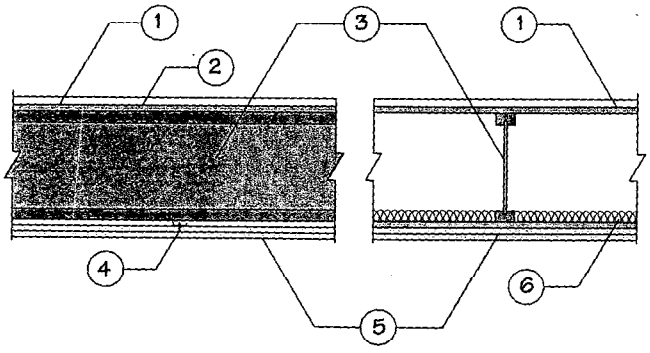
0 No reinforcement required.

W Web stiffener required each side of joist at bearing. See detail E1.W.

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

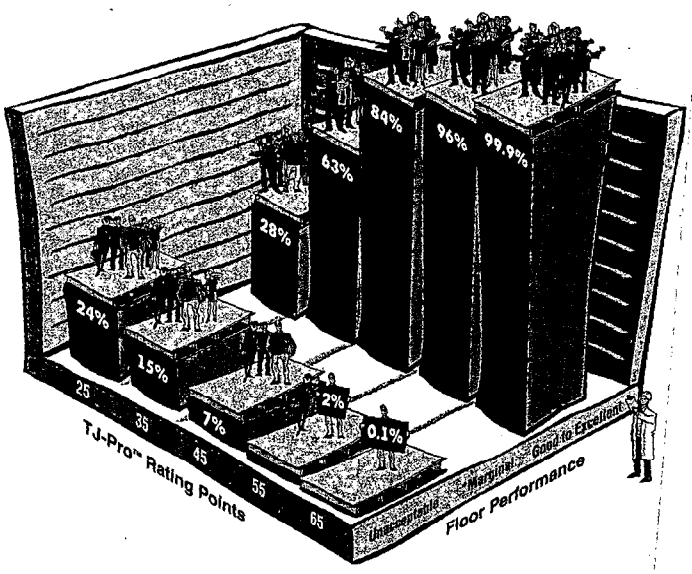
Type of Floor Covering	Without Gyp-Crete®		With Gyp-Crete®	
	STC	IIC	STC	IIC
None	54	46	58	46
Pad and Carpet	50	60	58	54
Armstrong VIOS Inlaid Sheet Vinyl	56	47	–	51
Armstrong Cambray Sheet Vinyl	–	–	–	50
Hartco Foam Backed Parquet	–	–	–	52
Tarkett Acoustiflor® Sheet Vinyl	–	51	58	54

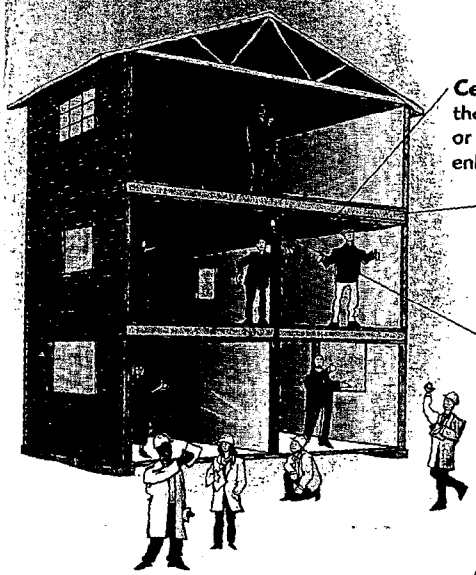
- For additional information regarding sound ratings contact your local Trus Joist representative.

TJ-Pro™ Rating System

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.





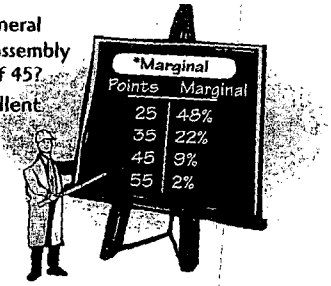
Ceiling – A ceiling directly applied to the bottom edge of the floor members—or equivalent strapping—is a performance enhancement.

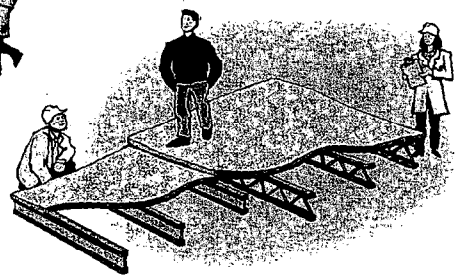
Continuity – Continuous joists over several supports generally perform better than simple spans. Care must be taken if the joists continue into another occupancy.

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.

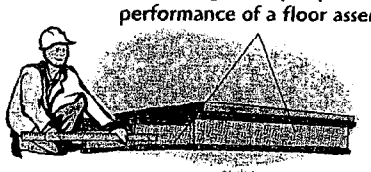
Example: How does the general public "feel" about a floor assembly with a Performance Value of 45?

- 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.



ince 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.

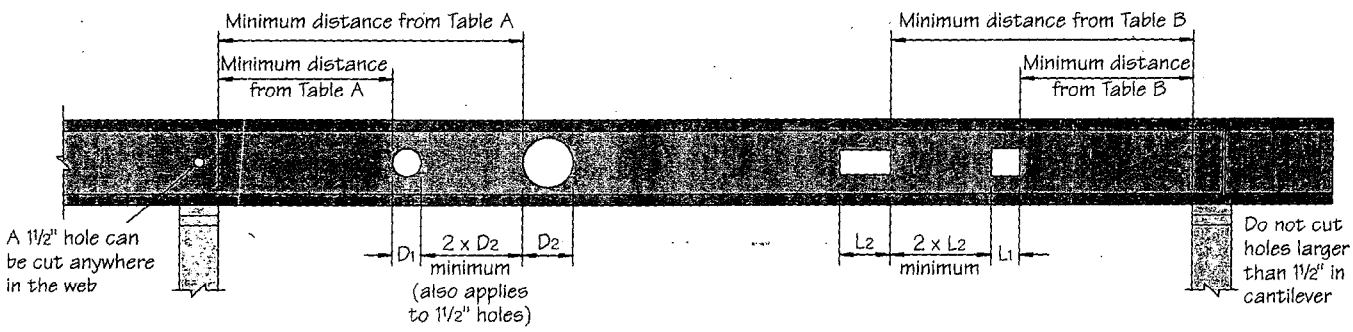
It has been well-documented that historic **uniform live load deflection criteria** alone is not enough to produce consistent and predictable performance results and that **dynamic floor system response** should be consideration.

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.

Allowable Holes



How to Use These Tables

- Locate the column that meets or exceeds the required hole size.
- Identify the TJI® joist and depth being used.
- 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

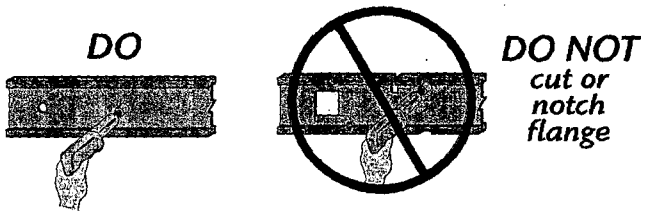
Depth	TJI®/Pro™	Round Hole Size							
		2"	4"	6"	8"	10"	12"	14"	16"
18"	350	1'-0"	1'-0"	1'-0"	1'-0"	4'-0"	7'-6"	13'-0"	
	550	1'-0"	1'-0"	1'-0"	3'-6"	6'-6"	10'-0"	15'-0"	
20"	350	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	6'-0"	10'-0"	14'-6"
	550	1'-0"	1'-0"	1'-0"	1'-0"	3'-6"	7'-0"	12'-0"	16'-0"

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"	14"	16"
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.



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Jul 17, 2001

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33663 Weyerhaeuser Way South
Federal Way, WASHINGTON 98003

FOR: structural wood products, including beams, columns and headers
INT. CLASS: 019

ALL OF THE GOODS/SERVICES IN EACH CLASS ARE LISTED

Foreign filing LTC docketed November 24, 2001

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