

SPECIFIER'S
GUIDE TO THE

Silent Floor[®]

S Y S T E M

TJI[®]/15 SP JOIST
PERFORMANCE PLUS[™]
SOUTHERN PINE

This literature is for legacy Trus Joist[®] products only and
is not intended for use in current specification.

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Joist[®] product offering and specification information.

Weyerhaeuser Archives

RG#5 Trus Joist Box 6:

Reorder 2003, November 1991



TRUS JOIST MACMILLAN
A Limited Partnership

2003

11/91

WE GO TO GREAT LENGTHS TO

To make a long story short, the Silent Floor® joist system from Trus Joist MacMillan is the most advanced residential floor system ever created. We developed the TJI® joist and MICRO=LAM® LVL more than two decades ago. These products established a new standard of performance and quality. In 1991, we introduced an entirely new generation of Silent Floor joists featuring the Performance

Plus™ web and an enhanced MICRO=LAM LVL flange. This high-performance combination produced a joist unequalled in moisture resistance and structural strength at an even more competitive cost.

Each of these developments demonstrates that we have the resolve and the resources to remain the leader in wood fiber engineering. So when you spec-

ify TJI joists and MICRO=LAM LVL beams, you can base your recommendation and reputation on a tradition of technological leadership.

The Silent Floor system also offers tremendous design flexibility because TJI joists and MICRO=LAM LVL beams



The complete Silent Floor system. TJI joists and MICRO=LAM LVL beams are available in lengths up to 60 feet.

*See our Residential Products Reference Guide for design information on MICRO=LAM LVL.

SUPPORT YOUR REPUTATION.



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are engineered to stay exceptionally strong and straight. With this complete system you're able to do things that would not be possible with lesser materials.

And unlike ordinary dimension lumber, Silent Floor joists will not shrink, warp, twist, cup or crown. Which eliminates the major cause of squeaky floors. Customer complaints. And costly call-backs.

This specifier's guide con-

QUALITY GUARANTEE

We guarantee that the Trus Joist MacMillan products used in your home were manufactured to precise tolerances and are free from defects. In the unlikely event that your floor or roof system develops squeaks or any other problem due to a defect in our products, we will promptly remedy that problem at no cost to you.

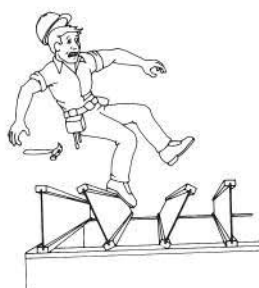
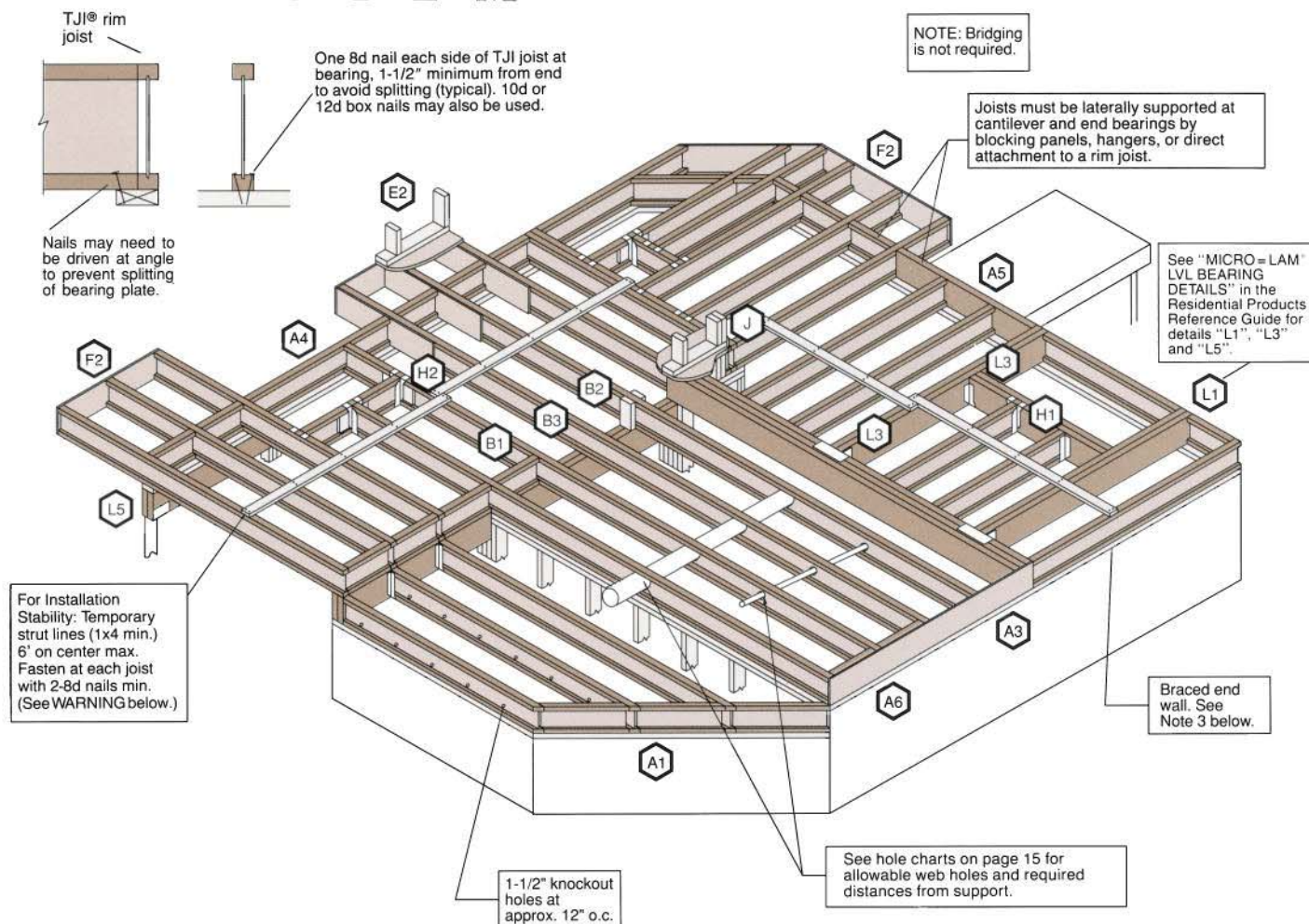
This guarantee is effective for the life of your home.
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tains specifications and details for residential applications. We hope you find it useful. If you have questions, are planning an unusual installation, or need information on a multi-family or commercial application, feel free to call the Trus Joist MacMillan representative nearest you. After all, now that you've decided to specify the one and only Silent Floor system, you can expect superior support on every level.

Legacy Literature
See Note on Front Cover

RESIDENTIAL TJI®/15 SP JOIST FLOOR DETAILS

TYPICAL *Silent Floor* FRAMING SYSTEM

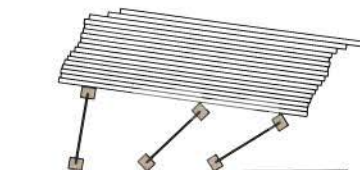


DO NOT allow workers to walk on joists until braced. INJURY MAY RESULT. See Notes 1, 2 & 3 below.

WARNING JOISTS ARE UNSTABLE UNTIL BRACED Laterally

BRACING INCLUDES:

- BLOCKING AND HANGERS
- STRUT LINES
- SHEATHING



DO NOT stack building materials on unbraced 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 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 1 x 4 (min.) 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 roll over 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 1/2" from the true alignment.

TJI®/15 SP JOIST RESIDENTIAL FLOOR SPAN CHARTS

SEE THE "PRODUCT DISTRIBUTION MAP" (BACK COVER) FOR GENERAL DISTRIBUTION OF DOUGLAS FIR AND SOUTHERN PINE PRODUCTS. BE SURE THE PRODUCT YOU SPECIFY IS AVAILABLE IN YOUR PROJECT'S LOCATION. CONTACT YOUR LOCAL TRUS JOIST MACMILLAN OFFICE FOR ASSISTANCE OR ADDITIONAL PRODUCT INFORMATION.

40 PSF LIVE LOAD, 10 PSF DEAD LOAD (Example: Single layer glue-nailed wood sheathing and direct applied ceiling)

MINIMUM CRITERIA PER CODE
L/360 LIVE LOAD DEFLECTION

o.c. spacing	TJI®/15 SP JOIST DEPTH	
	9 1/2"	11 7/8"
12"	18'-10"	22'-5"
16"	17'-3"	20'-6"
19.2"	16'-3"	19'-4"
24"	15'-2"	16'-7"

IMPROVED PERFORMANCE SYSTEM
L/480 LIVE LOAD DEFLECTION

o.c. spacing	TJI®/15 SP JOIST DEPTH	
	9 1/2"	11 7/8"
12"	17'-0"	20'-3"
16"	15'-6"	18'-6"
19.2"	14'-8"	17'-6"
24"	13'-8"	16'-3"

40 PSF LIVE LOAD, 20 PSF DEAD LOAD (Example: Single layer glue-nailed wood sheathing with 3/4" poured gypsum concrete and direct applied ceiling)

MINIMUM CRITERIA PER CODE
L/360 LIVE LOAD DEFLECTION

o.c. spacing	TJI®/15 SP JOIST DEPTH	
	9 1/2"	11 7/8"
12"	18'-10"	22'-5"
16"	17'-1"	19'-9"
19.2"	15'-7"	17'-3"
24"	13'-9"	13'-9"

IMPROVED PERFORMANCE SYSTEM
L/480 LIVE LOAD DEFLECTION

o.c. spacing	TJI®/15 SP JOIST DEPTH	
	9 1/2"	11 7/8"
12"	17'-0"	20'-3"
16"	15'-6"	18'-6"
19.2"	14'-8"	17'-3"
24"	13'-8"	13'-9"

NOTE: Installing TJI® joists at closer on center spacings or at shorter spans than shown may improve floor performance. See below for "A WORD ABOUT FLOOR PERFORMANCE," or contact your Trus Joist MacMillan representative for assistance.

GENERAL NOTES:

- Span charts assume composite action with single layer of the appropriate span rated glue-nailed wood decking for deflection only. **Spans shall be reduced 5" where sheathing panels are nailed only.**
- Spans are based on clear distance between supports, uniformly loaded joists, and include allowable increases for repetitive use members.
- For loading conditions not shown, refer to allowable uniform load tables on page 14.
- Spans shown reflect the most restrictive of simple span or multiple span applications.
- Web stiffeners are required for lateral support of the joist if the sides of the hanger do not laterally support the TJI® joist top flange. Otherwise, web stiffeners do not enhance bearing capacity and are not required for TJI®/15 SP floor joists.

A WORD ABOUT FLOOR PERFORMANCE

The spans indicated in the "Minimum Criteria Per Code" charts above meet or exceed all code requirements and may provide acceptable performance to the user. But, in addition to safely supporting the loads to be imposed on it, a floor system must perform to the satisfaction of the end user. Since expectancy levels may vary from one user to another, designing a floor system becomes a subjective issue requiring judgement as to the sensitivity of the occupant.

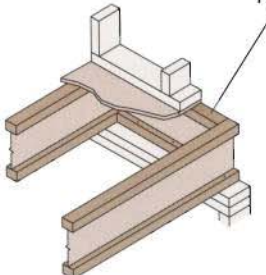
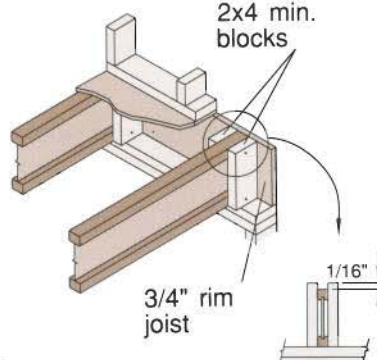
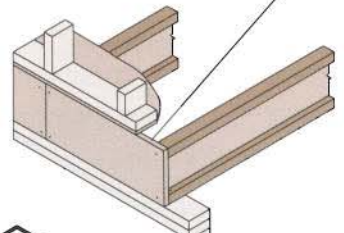
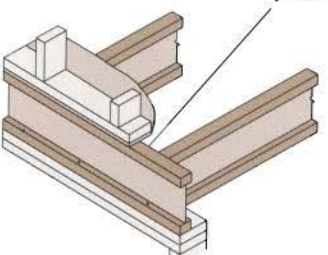
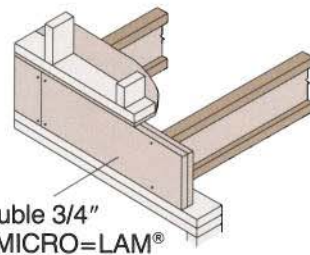
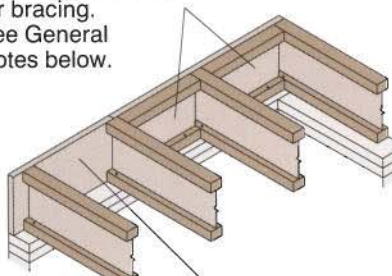
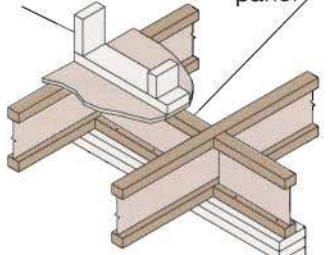
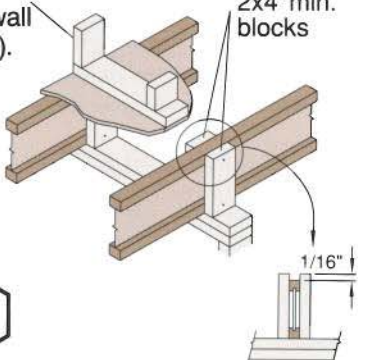
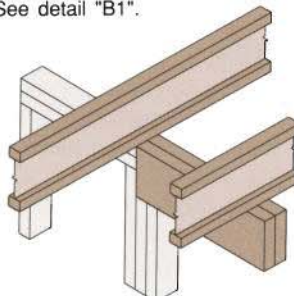
The second span charts above entitled "Improved Performance System" have been developed as a guide to help builders construct higher quality floors. Spans in these charts were developed using stricter live load deflection criteria to limit deflection over longer spans.

In addition to the joist deflection, several other factors may affect the performance of the floor system. A glue-nailed floor

system will perform better than a nailed floor. Deflection of the sheathing material between the joists can be reduced by increasing the thickness of sheathing or decreasing the spacing of the joist. Proper installation, including adequate and level support for the joists, and care in fastening of the joists and sheathing are essential to the system performance.

In some cases where the system is stiff and very little dead load (i.e. partition walls, ceilings, furniture, etc.) exists, vibrations may occur. Vibrations are generally sufficiently dampened when a ceiling is directly attached to the bottom flange of the joists. When the joists occur in a crawl space or over an unfinished basement, the vibration can be minimized by nailing a continuous 2x4 (flat) perpendicular to the joists' bottom flanges at midspan and tying off to the end walls.

Legacy Literature
See Note on Front Cover

 <p>Blocking panel</p> <p>A1</p>	 <p>2x4 min. blocks</p> <p>3/4" rim joist</p> <p>1/16"</p> <p>A2 See detail "A6" for additional information.</p>	<p>Use only for single story applications or second story of two-story applications.</p>  <p>3/4" rim joist</p> <p>A3 See detail "A6" for additional information.</p>
 <p>TJI rim joist</p> <p>A4 NOTE: Must have 1-3/4" minimum joist bearing at wall.</p>	 <p>Double 3/4" or MICRO=LAM® LVL rim joist</p> <p>A5 See detail "A6" for additional information.</p>	<p>Blocking panels used for bracing. See General Notes below.</p>  <p>3/4" rim joist</p> <p>A6</p>
<p>Load bearing or shear wall above (must stack over wall below).</p>  <p>Blocking panel</p> <p>B1</p>	<p>Load bearing wall above (must stack over wall below).</p> <p>Blocking panels may be required with shear walls above or below. See detail "B1".</p>  <p>2x4 min. blocks</p> <p>1/16"</p> <p>B2</p>	<p>Blocking panels may be required with shear walls above or below. See detail "B1".</p>  <p>B3 INTERMEDIATE BEARING - NO LOAD BEARING WALL ABOVE.</p>

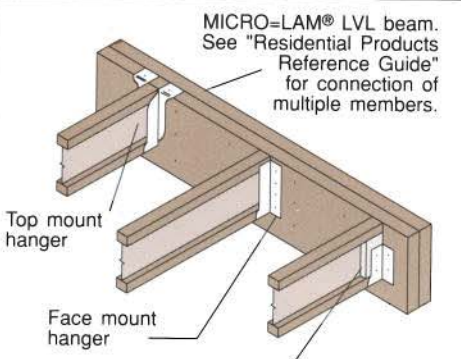
GENERAL NOTES

MINIMUM BEARING LENGTH

- 1 3/4" minimum bearing is required at joist ends.
- 3 1/2" minimum bearing is required when joists are continuous over the support.

3/4" RIM JOIST, REINFORCEMENT OR CLOSURE

- 3/4" for rim joist, reinforcement or closure refers to 3/4" CDX plywood or other 3/4" exterior grade 48/24 span rated sheathing that is cut to match the full depth of the joist. Install with face grain horizontal.
- Rim joist and cantilever reinforcement must bear fully on the wall plate.
- Bracing complying with the code shall be carried to the foundation. When 3/4" rim joist is used blocking panels cut from TJI® joists or MICRO=LAM® LVL may be installed for a minimum of 4' at each end and at least 4' every 25' of bearing wall length to carry wall bracing as required to the foundation. See detail "A6".
- Check local codes for acceptance of details "A2", "A3", "A5" and "A6".

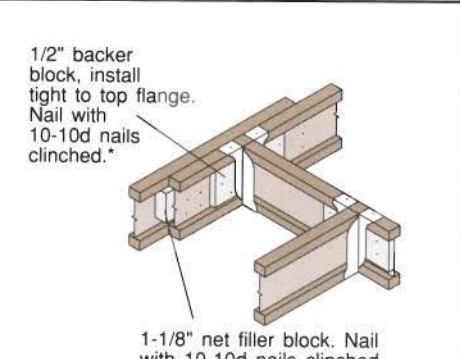


MICRO=LAM® LVL beam. See "Residential Products Reference Guide" for connection of multiple members.

Top mount hanger

Face mount hanger

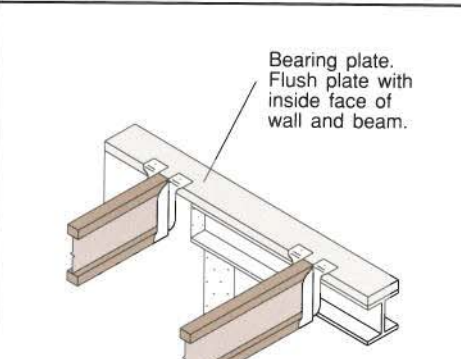
H1 Web stiffeners are required if the sides of the hanger do not laterally support the TJI® joist top flange. See detail "K".



1/2" backer block, install tight to top flange. Nail with 10-10d nails clinched.*

1-1/8" net filler block. Nail with 10-10d nails clinched.

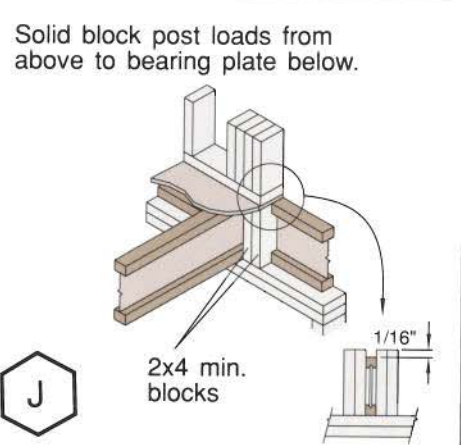
H2 * Backer block required where hanger load exceeds 250 pounds.



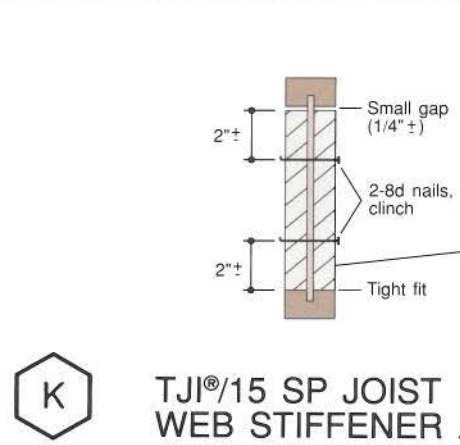
Bearing plate. Flush plate with inside face of wall and beam.

H3

Solid block post loads from above to bearing plate below.



J 2x4 min. blocks



Small gap (1/4" ±)

2-8d nails, clinch

Plywood web stiffener each side: 1/2" x 2-5/16" minimum.

Tight fit

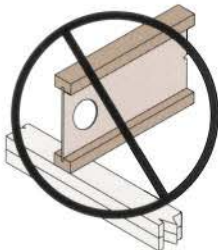
K

Legacy Literature
See Note on Front Cover

TJI®/15 SP JOIST WEB STIFFENER ATTACHMENT

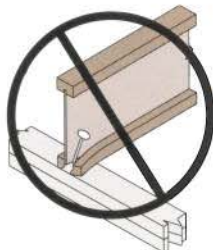
THESE CONDITIONS ARE NOT PERMITTED

DO NOT put holes too close to supports



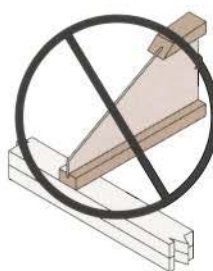
Refer to hole charts on page 15 for minimum distance from bearing wall.

DO NOT split the flange

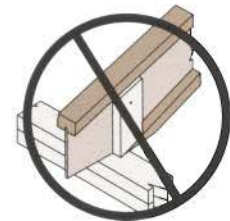


Use 8d nails, 1 1/2" minimum from end of flange. 10d or 12d box nails may also be used.

DO NOT bevel cut joist beyond inside face of wall.



Birdsmouth cut must not overhang inside face of plate.



TJI® joist flange must bear fully on the plate. See detail "R12" on page 13.

BLOCKING PANELS OR RIM JOISTS

- For single-story applications and second floor of two-story applications, use details "A1," "A2," "A3," "A4," or "A5."
- For main floor rim of two-story applications, use details "A1," "A2," "A4," or "A5."
- Assumes 1000 plf vertical load transfer for each layer of 3/4" rim joist.
- Assumes 2000 plf vertical load transfer for each TJI® blocking panel or rim joist.
- Assumes 5145 plf vertical load transfer for each 1 3/4" MICRO=LAM® LVL used as rim joist or blocking.

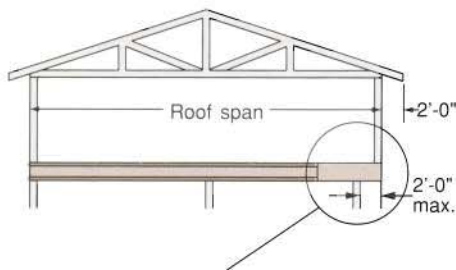
NAILING REQUIREMENTS

- Nail joists at bearings with 2-8d (or 10d or 12d box) nails (1 each side), 1 1/2" minimum from end to avoid splitting.
- Nail TJI® joist blocking panels or TJI® rim joist to bearing plate with 8d nails at 6" on center. When used for shear transfer, nail to bearing plate with same nailing as the decking.
- Nail TJI® rim joist, MICRO=LAM® LVL rim joist, 3/4" rim joist or closure to TJI® joist with 2-8d nails, one each at top and bottom flange.
- Attach 2x4 min. blocks at details "A2," "B2" and "J" to TJI® joist top and bottom flanges with 1-8d nail.

WEB STIFFENER REQUIREMENTS

- Web stiffeners are required for lateral support of the joist if the sides of the hanger do not laterally support the TJI® joist top flange. Otherwise, web stiffeners do not enhance bearing capacity and are not required for TJI®/15 SP floor joists.

LOAD BEARING CANTILEVER DETAILS

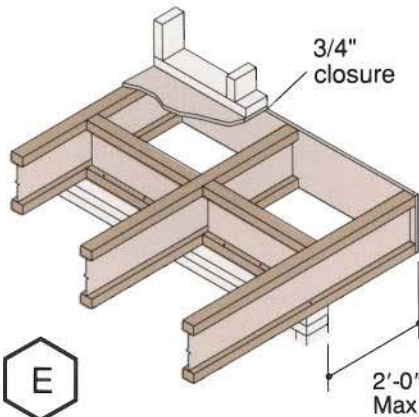


TJI® joists may be cantilevered up to a maximum of 2'-0" when supporting roof load, but may require reinforcement. **Consult tables on page 9 to determine required reinforcement** and details at right for methods of reinforcement.

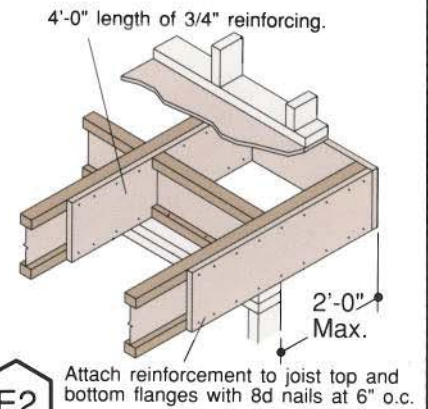
NOTE:

3/4" CDX plywood reinforcement or other 3/4" exterior grade 48/24 span rated sheathing must match the full depth of the TJI® joist. Install with face grain horizontal. Reinforcing member must bear fully on the wall plate.

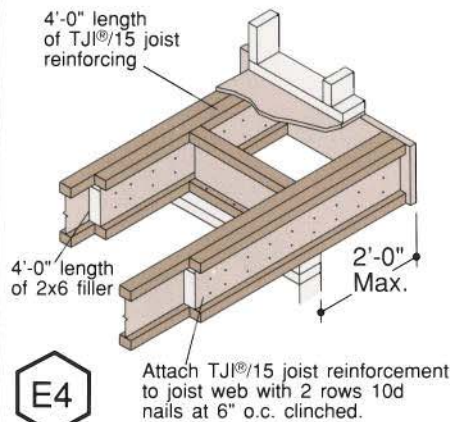
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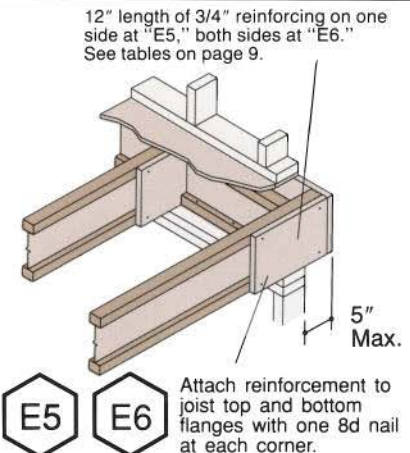
E2



E4



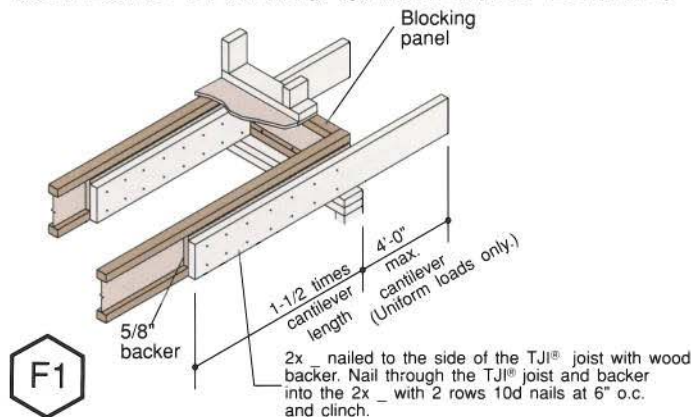
E5



E6

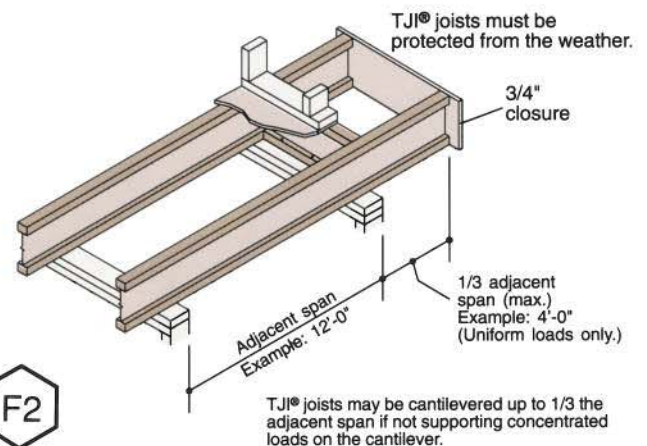
Attach reinforcement to joist top and bottom flanges with one 8d nail at each corner.

NON-LOAD BEARING CANTILEVER DETAILS



F1

F2



REFER TO PAGES 6 AND 7 FOR GENERAL NOTES FOR DETAILS.

NAILING OF SHEATHING TO TOP FLANGE

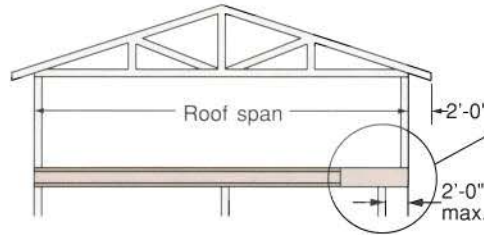
Nail Size	Closest o.c. spacing per row
8d box	2-1/2"
8d common	3-1/2"
10d, 12d box	3"

- Maximum spacing of nails is 18" o.c.
- 14 ga. staples may be substituted for 8d nails if minimum penetration of 1" into the TJI® joist is achieved.

Joist Layout for 19.2" On Center Spacing

	1 - 19 3/16"
	2 - 38 3/8"
	3 - 57 9/8"
	4 - 76 13/16"
8'	5 - 96"
	6 - 115 3/16"
	7 - 134 3/8"
	8 - 153 5/8"
	9 - 172 13/16"
16'	10 - 192"
	11 - 211 3/16"
	12 - 230 3/8"
	13 - 249 5/8"
	14 - 268 13/16"
24'	15 - 288"

TJI®/15 SP LOAD BEARING CANTILEVER TABLE



TJI® joists may be cantilevered up to a maximum of 2'-0" when supporting roof load, but may require reinforcement. Consult table and refer to footnotes to determine required reinforcement. See details E2 and E4 on page 8 for methods of reinforcement.

Roof Total Load		30 PSF			40 PSF			50 PSF		
Joist Spcg.		16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9 1/2" TJI®/15 SP	Roof Truss Span w/24" Soffit Assumed	24'	0	0	0	0	1	0	1	1
		26'	0	0	0	1	1	1	1	X
		28'	0	0	1	0	1	1	1	X
		30'	0	0	1	0	1	1	1	X
		32'	0	0	1	0	1	X	1	X
		34'	0	0	1	1	1	X	X	X
		36'	0	1	1	1	1	X	X	X
11 7/8" TJI®/15 SP	Roof Truss Span w/24" Soffit Assumed	26'	0	0	1	0	1	1	1	1
		28'	0	0	1	0	1	1	1	1
		30'	0	0	1	1	1	1	1	1
		32'	0	0	1	1	1	1	1	1
		34'	0	1	1	1	1	1	1	1
		36'	0	1	1	1	1	1	1	X
		38'	0	1	1	1	1	1	1	X

Numbers in charts refer to footnotes below.

0. No reinforcement required.

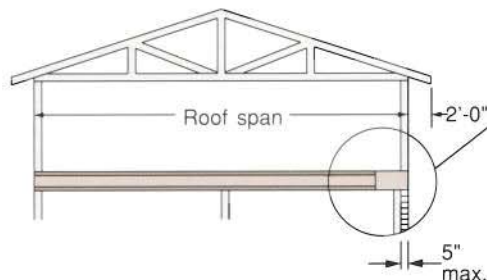
1. 3/4" x 48" reinforcement required on one side of joist as shown in detail E2 on page 8 or, double the joists as shown in detail E4 on page 8.

X. Will not work. Reduce spacing of joists.

NOTE:

- Assumes a 10 psf roof dead load and 60 plf wall load. Additional support may be required for other loadings.
- 3/4" reinforcement refers to 3/4" CDX plywood or other 3/4" exterior grade 48/24 span rated sheathing that is cut to match the full depth of the joist. Install with face grain horizontal. Reinforcing member must bear fully on the wall plate. Minimum wall plate width is 3 1/2 inches.
- Calculations assume a bearing stress of 480 psi.

TJI®/15 SP LOAD BEARING CANTILEVER TABLE – BRICK LEDGE



TJI® joists for brick ledge cantilevers may be cantilevered up to 5" when supporting roof load, but may require reinforcement. Consult table and refer to footnotes to determine required reinforcement. See details E5 and E6 on page 8 for method of reinforcement.

Roof Total Load		30 PSF			40 PSF			50 PSF		
Joist Spcg.		16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9 1/2" TJI®/15 SP	Roof Truss Span w/24" Soffit Assumed	24'	0	0	0	0	1	1	1	1
		26'	0	0	1	0	1	1	1	1
		28'	0	0	1	0	1	1	1	1
		30'	0	0	1	0	1	1	1	1
		32'	0	1	1	0	1	1	1	2
		34'	0	1	1	0	1	1	1	2
		36'	0	1	1	0	1	1	1	2
11 7/8" TJI®/15 SP	Roof Truss Span w/24" Soffit Assumed	24'	0	0	0	0	1	1	1	1
		26'	0	0	1	0	1	1	1	1
		28'	0	0	1	0	1	1	1	1
		30'	0	0	1	0	1	1	1	1
		32'	0	1	1	0	1	1	1	2
		34'	0	1	1	0	1	1	1	2
		36'	0	1	1	0	1	1	1	2

Numbers in charts refer to footnotes below.

0. No reinforcement required.

1. 3/4" x 12" reinforcement required on one side of joist. Attach per detail E5 on page 8.

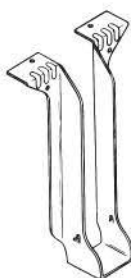
2. 3/4" x 12" reinforcement required on both sides of joist. Attach per detail E6 on page 8.

NOTE:

- Assumes a 10 psf roof dead load and 60 plf wall load. Additional support may be required for other loadings.
- 3/4" reinforcement refers to 3/4" CDX plywood or other 3/4" exterior grade 48/24 span rated sheathing that is cut to match the full depth of the joist. Install with face grain horizontal. Reinforcing member must bear fully on the wall plate. Minimum wall plate width is 3 1/2 inches.
- Calculations assume a bearing stress of 480 psi.

TJI®/15 SP JOIST FRAMING CONNECTORS

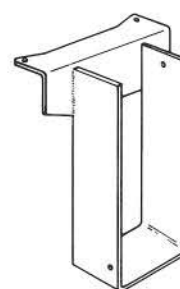
C1 TOP MOUNT SINGLE JOIST HANGER



Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

Hanger
IT29.5 or ITT29.5
IT211.88 or ITT211.88

C2 TOP MOUNT DOUBLE JOIST HANGER



Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

Hanger
WP29.5-2
WP211.88-2

Maximum Load (lbs.)
2525
2525

C3 FACE MOUNT SINGLE JOIST HANGER



Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

Hanger
IU29 or IUT29
IU211 or IUT211

C4 FACE MOUNT DOUBLE JOIST HANGER



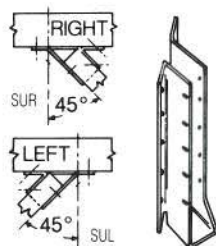
Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

Hanger
U210-2*
HU212-2*

*Requires use of web stiffeners.

Maximum Load (lbs.)
1875 (100%) – 2350 (125%)
2160 (100%) – 2700 (125%)

C5 FACE MOUNT SKEWED 45° JOIST HANGER



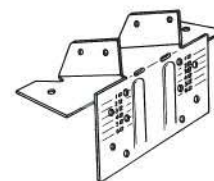
TOP VIEW

45° Skewed Hanger
SUR 210/SUL 210*
SUR 210/SUL 210*

Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

*Requires use of web stiffeners.

C6 VARIABLE SLOPE SEAT CONNECTOR



NOTE:

- Requires 3 1/2" width bearing surface.
- May be used only on slopes of 1"/12" through 6"/12".

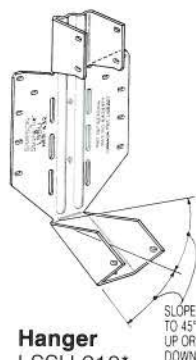
Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

Connector
VP 2
VP 2

Maximum Load (lbs.)
1150
1150

C7 VARIABLE SLOPE SEAT JOIST HANGER

NOTE:
Hanger can be field adjusted for slopes and skews of up to 45 degrees.



Joist
9 1/2" TJI®/15 SP
11 7/8" TJI®/15 SP

*Requires use of web stiffeners.

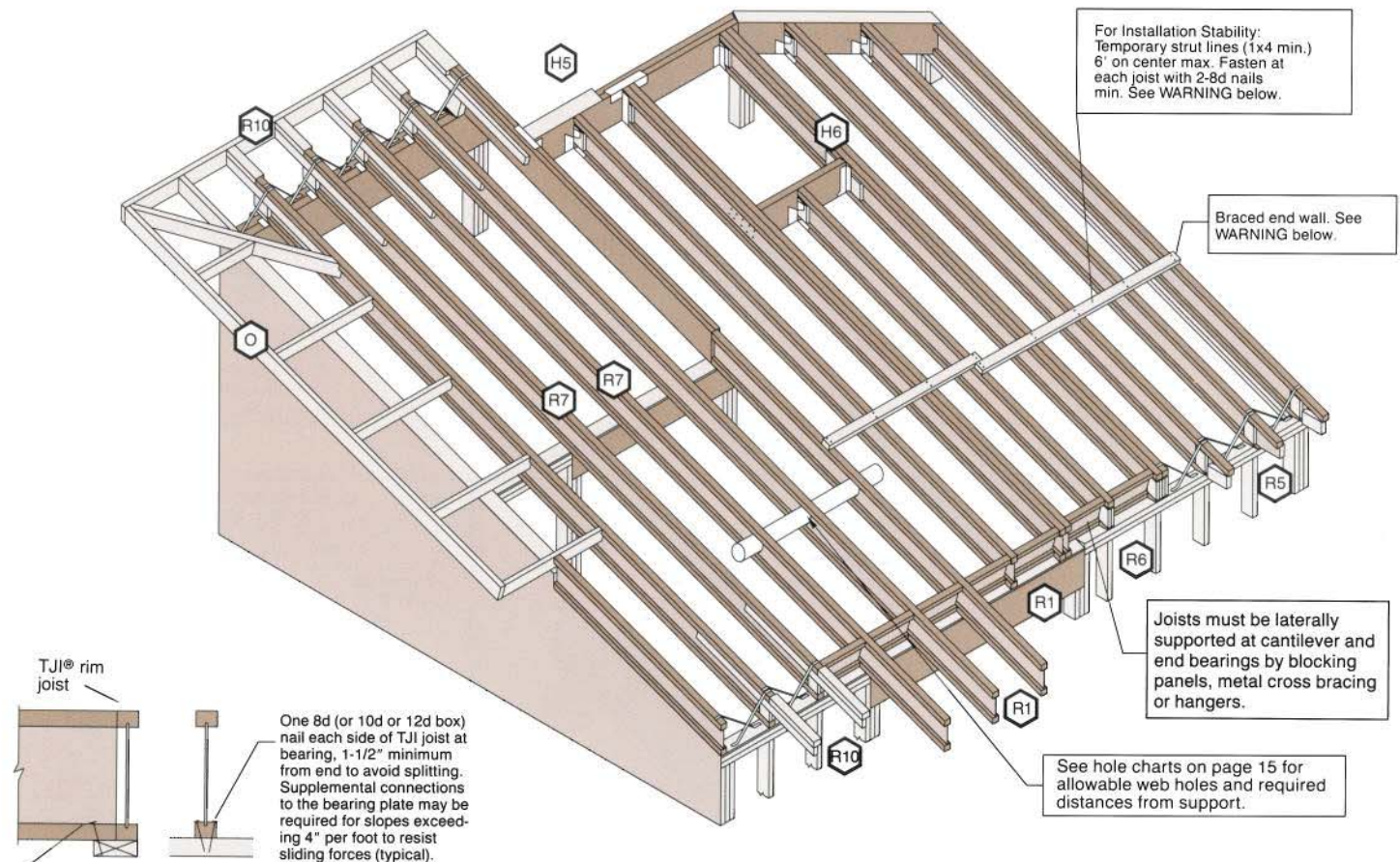
Hanger
LSSU 210*
LSSU 210*

NOTES:

Some hangers shown have less capacity than the capacity of the TJI® joists. For single joist applications beyond those shown in the span tables and all double joist applications, these hangers will need to be checked to assure adequate capacity.

- Hangers can only achieve maximum capacity if all nail holes are filled with the proper nails.
- In some cases, the hangers shown may have greater capacity when used in conjunction with certain supporting member categories or support member criteria.
- The hangers listed above are manufactured by Simpson Strong-Tie® Company, Inc. For additional hanger information, please refer to the appropriate Simpson Strong-Tie® Company, Inc. evaluation report.

RESIDENTIAL TJI®/15 SP JOIST ROOF DETAILS & SPAN CHART



Nails may need to be driven at angle to prevent splitting of bearing plate.

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

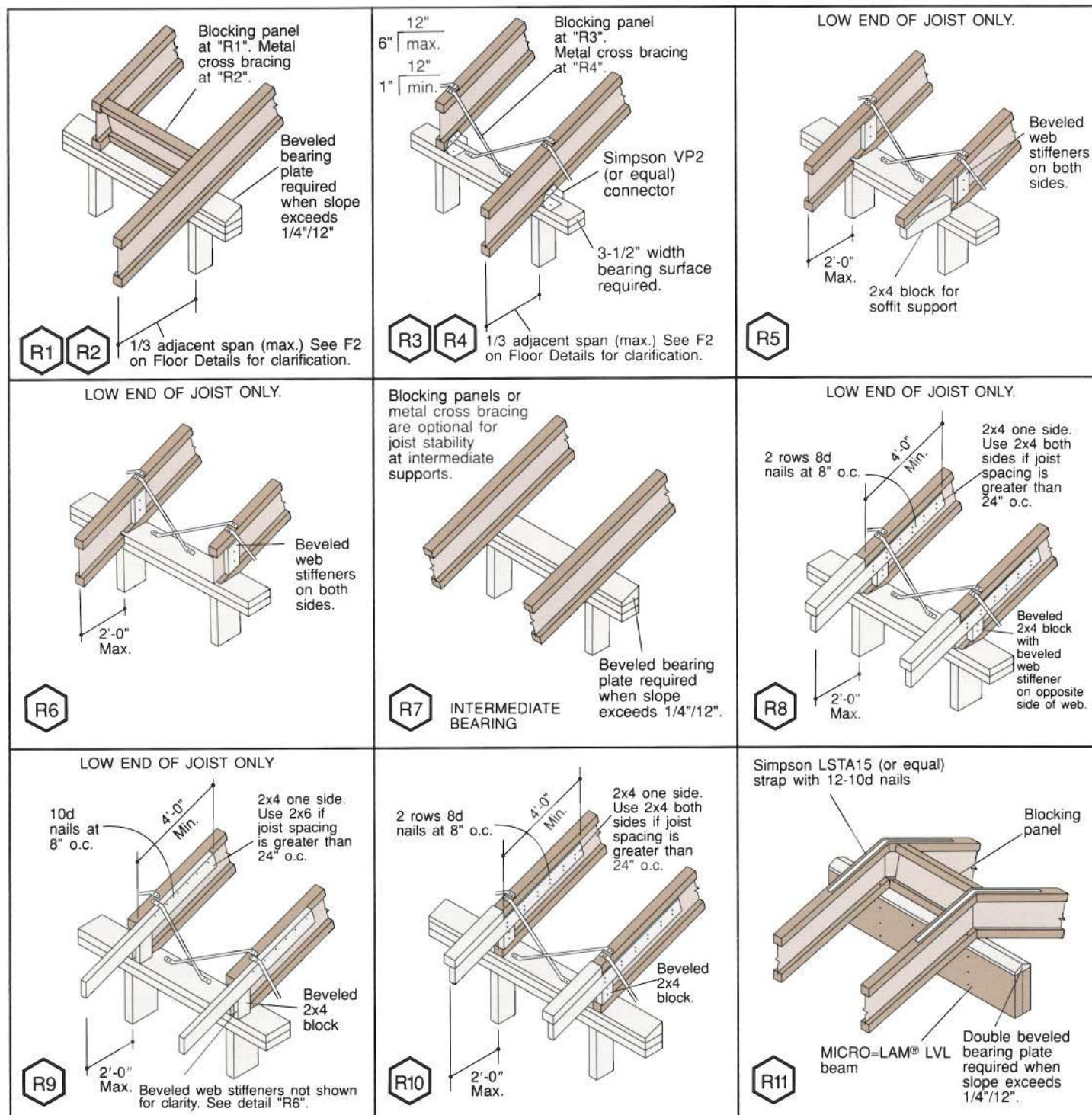
TJI®/15 SP JOIST – RESIDENTIAL ROOF SPAN CHARTS

Low Slope: 6"/12" or less.
High Slope: Over 6"/12" through 12"/12"

TJI®/15 SP			DESIGN LIVE LOAD (LL) AND DEAD LOAD (DL) IN PSF															
O.C. SPACING	DEPTH	SLOPE	NON-SNOW (125%)		SNOW LOAD AREA (115%)													
			20 LL 10 DL	20 LL 20 DL	20 LL 10 DL	20 LL 20 DL	25 LL 10 DL	25 LL 15 DL	25 LL 20 DL	30 LL 10 DL	30 LL 15 DL	30 LL 20 DL	40 LL 10 DL	40 LL 20 DL	50 LL 10 DL	50 LL 20 DL	50 LL 10 DL	50 LL 20 DL
12" o.c.	9 1/2"	LOW	23'-8"	21'-4"	23'-8"	21'-4"	22'-6"	21'-5"	20'-6"	21'-6"	20'-7"	19'-10"	19'-9"	18'-8"	18'-3"	17'-9"		
		HIGH	21'-3"	18'-11"	21'-3"	18'-11"	20'-4"	19'-2"	18'-3"	19'-6"	18'-6"	17'-9"	18'-2"	16'-10"	16'-11"	16'-0"		
	11 7/8"	LOW	28'-7"	25'-9"	28'-7"	25'-9"	27'-2"	25'-10"	24'-9"	26'-0"	24'-10"	23'-11"	23'-9"	22'-6"	22'-0"	21'-5"		
		HIGH	25'-8"	22'-10"	25'-8"	22'-10"	24'-6"	23'-2"	22'-1"	23'-6"	22'-4"	21'-5"	21'-11"	20'-3"	20'-5"	19'-4"		
16" o.c.	9 1/2"	LOW	21'-6"	19'-4"	21'-6"	19'-4"	20'-5"	19'-5"	18'-7"	19'-6"	18'-8"	17'-11"	17'-10"	16'-11"	16'-6"	16'-0"		
		HIGH	19'-4"	17'-2"	19'-4"	17'-2"	18'-5"	17'-5"	16'-7"	17'-8"	16'-10"	16'-1"	16'-6"	15'-2"	15'-4"	14'-6"		
	11 7/8"	LOW	25'-11"	23'-4"	25'-11"	23'-4"	24'-7"	23'-5"	22'-5"	23'-6"	22'-6"	21'-8"	21'-6"	20'-5"	19'-11"	19'-3"		
		HIGH	23'-3"	20'-8"	23'-3"	20'-8"	22'-2"	21'-0"	20'-0"	21'-4"	20'-3"	19'-4"	19'-10"	18'-4"	18'-6"	17'-6"		
19.2" o.c.	9 1/2"	LOW	20'-2"	18'-2"	20'-2"	18'-2"	19'-2"	18'-3"	17'-5"	18'-4"	17'-6"	16'-10"	16'-9"	15'-10"	15'-6"	15'-1"		
		HIGH	18'-2"	16'-1"	18'-2"	16'-1"	17'-4"	16'-4"	15'-7"	16'-7"	15'-9"	15'-1"	15'-6"	14'-3"	14'-5"	13'-7"		
	11 7/8"	LOW	24'-4"	21'-11"	24'-4"	21'-11"	23'-1"	22'-0"	21'-1"	22'-1"	21'-2"	20'-4"	20'-2"	18'-11"	18'-8"	17'-7"		
		HIGH	21'-10"	19'-5"	21'-10"	19'-5"	20'-10"	19'-8"	18'-9"	20'-0"	19'-0"	18'-2"	18'-8"	17'-3"	17'-4"	16'-5"		
24" o.c.	9 1/2"	LOW	18'-8"	16'-9"	18'-8"	16'-9"	17'-9"	16'-10"	16'-2"	16'-11"	16'-3"	15'-7"	15'-6"	14'-8"	14'-4"	13'-7"		
		HIGH	16'-10"	14'-11"	16'-10"	14'-11"	16'-0"	15'-2"	14'-5"	15'-4"	14'-7"	13'-11"	14'-4"	13'-2"	13'-4"	12'-7"		
	11 7/8"	LOW	22'-6"	20'-3"	22'-6"	20'-2"	21'-5"	20'-4"	19'-5"	20'-5"	19'-2"	18'-6"	18'-8"	16'-11"	17'-1"	14'-9"		
		HIGH	20'-3"	18'-0"	20'-3"	18'-0"	19'-4"	18'-3"	17'-4"	18'-6"	17'-7"	16'-10"	17'-3"	15'-8"	16'-1"	13'-8"		

- Roof joists to be sloped 1/4" in 12" minimum. No camber provided.
- Maximum deflection is limited to L/180 at total load, and L/240 at live load.
- For loads not shown, refer to allowable uniform load table on page 14.
- Charts are based on a support beam or wall at the high end. Applications utilizing ridge boards are not covered by these charts.
- Spans are based on the horizontal clear distance between supports, uniformly loaded joists, and include allowable increases for repetitive use members.
- Spans shown are based on the most restrictive of simple span or multiple span applications.
- Web stiffeners are required for lateral support of the joist if the sides of the hanger do not laterally support the TJI® joist top flange. Web stiffeners are also required at all sloped hanger locations and all birdsmouth cut locations. Otherwise, web stiffeners do not enhance bearing capacity and are not required for TJI®/15 SP roof joists.

Legacy Literature
See Note on Front Cover



GENERAL NOTES

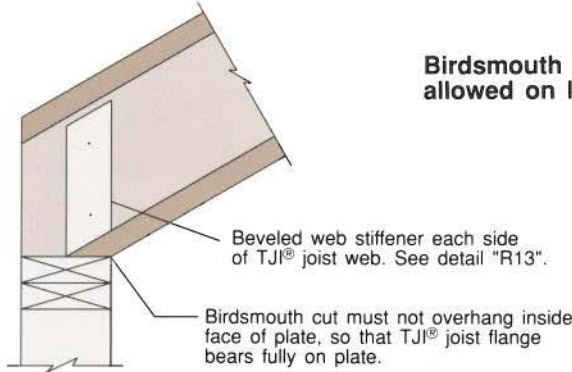
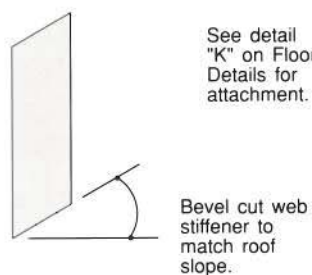
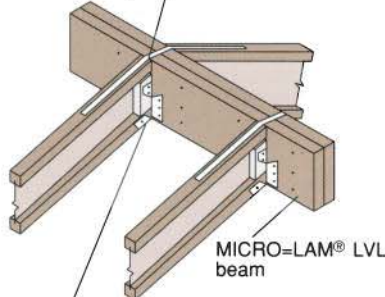
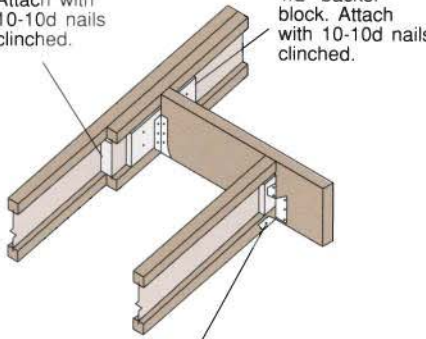
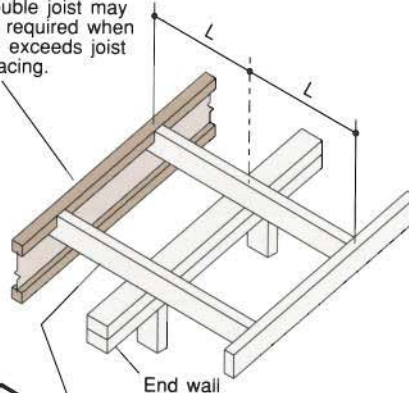
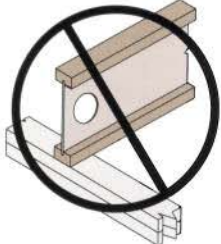
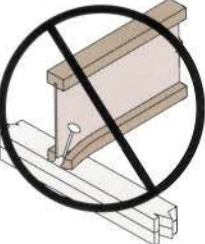
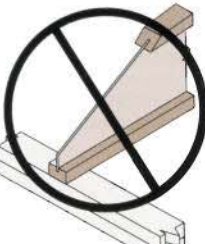
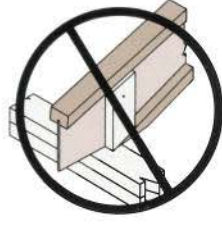
MINIMUM BEARING LENGTH

- 1 3/4" minimum bearing is required at joist ends.
- 3 1/2" minimum bearing is required when joists are continuous over the support.

SLOPE/BEVEL PLATE CRITERIA

- Unless otherwise noted, all details are valid to maximum 12"/12" slope.
- A sloped bearing surface is required for all slopes exceeding 1/4" per foot for wood bearing surfaces. At the low end of joists a birdsmouth cut may be used without a beveled bearing surface. See detail R12.
- Slope seats for hangers are required when the roof slope exceeds 1/2" per foot. Beveled web stiffeners are required at sloped seat hangers. See detail R13.
- Supplemental connections to the bearing plate may be required for sloped conditions beyond 4" per foot to resist sliding forces.

Legacy Literature
See Note on Front Cover

 <p>Birdsmouth cut is only allowed on low end of joist.</p> <p>Beveled web stiffener each side of TJI® joist web. See detail "R13".</p> <p>Birdsmouth cut must not overhang inside face of plate, so that TJI® joist flange bears fully on plate.</p> <p>R12 BIRDSMOUTH CUT</p>	 <p>See detail "K" on Floor Details for attachment.</p> <p>Bevel cut web stiffener to match roof slope.</p> <p>R13 BEVELED WEB STIFFENER</p>	
<p>Simpson LSTA 15 (or equal) strap with 12-10d nails may be required with hangers other than LSSU210 when slope exceeds 7°/12°</p>  <p>MICRO=LAM® LVL beam</p> <p>Simpson LSSU210 (or equal) hanger with beveled web stiffeners</p> <p>H5</p>	<p>1-1/8" net filler block. Attach with 10-10d nails clinched.</p> <p>1/2" backer block. Attach with 10-10d nails clinched.</p>  <p>Simpson LSSU210 (or equal) hanger with beveled web stiffeners</p> <p>H6</p>	<p>Double joist may be required when "L" exceeds joist spacing.</p>  <p>End wall</p> <p>2x overhang. Notch around TJI® joist top flange.</p> <p>O</p>
<p>THESE CONDITIONS ARE NOT PERMITTED</p> <div style="display: flex; justify-content: space-around;"> <div data-bbox="162 1155 406 1554"> <p>DO NOT put holes too close to supports</p>  <p>Refer to hole charts on page 15 for minimum distance from bearing wall.</p> </div> <div data-bbox="503 1155 779 1554"> <p>DO NOT split the flange</p>  <p>Use 8d nails, 1 1/2" minimum from end of flange. 10d or 12d box nails may also be used.</p> </div> <div data-bbox="828 1155 1071 1554"> <p>DO NOT bevel cut joist beyond inside face of wall.</p>  </div> <div data-bbox="1201 1155 1477 1554"> <p>Birdsmouth cut must not overhang inside face of plate.</p>  <p>TJI® joist flange must bear fully on the plate. See detail "R12" above.</p> </div> </div>		

LATERAL SUPPORT TO PREVENT JOIST ROLLOVER

- All roof joist end bearings must be laterally supported to prevent joist rollover. Use TJI® joist blocking panels or metal cross bracing. Attach metal cross bracing with 2-10d nails at each end.

WEB STIFFENER REQUIREMENTS

- Web stiffeners are required for lateral support of the joist if the sides of the hanger do not laterally support the TJI® joist top flange. Web stiffeners are also required at all sloped hanger locations and at all birdsmouth cut locations. Otherwise, web stiffeners do not enhance bearing capacity and are not required for TJI®/15 SP roof joists.

TJI®/15 SP ALLOWABLE UNIFORM LOAD TABLE

Values shown are in pounds per lineal foot (PLF)

JOIST SPAN	9 1/2" TJI®/15 SP					11 7/8" TJI®/15 SP					JOIST SPAN
	Floor		Roof			Floor		Roof			
	LIVE LOAD	TOTAL LOAD	TOTAL LOAD		DEFL.	LIVE LOAD	TOTAL LOAD	TOTAL LOAD		DEFL.	
	L/480	100%	115%	125%	L/240	L/480	100%	115%	125%	L/240	
6		272	312	340			272	312	340		6
8		205	235	256			205	235	256		8
10	146	165	189	206			165	189	206		10
12	89	138	158	172			138	158	172		12
14	59	114	131	142	117	98	118	135	147		14
16	40	80	101	107	80	68	104	119	130		16
18	29	58	77	77	58	49	92	105	115	98	18
20	21	43	57	57	43	36	73	86	93	73	20
22	16	32	43	43	32	28	56	71	74	56	22
24	12	25	33	33	25	21	43	57	57	43	24
26			26	26	20	17	35	46	46	35	26
28			21	21	16	14	28	37	37	28	28
30								30	30	23	30
32								25	25	19	32

1. Load capacity assumes no composite action provided by sheathing.
2. The values above reflect the most restrictive of simple span or multiple span applications.
3. Web stiffeners are required for lateral support of the joist if the sides of the hanger do not laterally support the TJI® joist top flange. Web stiffeners are also required at all sloped hanger locations and all birdsmouth cut locations. Otherwise, web stiffeners do not enhance bearing capacity and are not required for TJI®/15 SP joists.

FLOOR JOISTS:

4. To size a joist for use in a floor, it is necessary to check both live load and total load. When live load is not shown, total load will control.
5. Total load column limits joist deflection to L/240.
6. Live load column limits joist deflection to L/480. For live load deflection limit of L/360 (minimum code criteria) multiply values in live load column by 1.33.

ROOF JOISTS:

7. Roof joists to be sloped 1/4" in 12" minimum. No camber provided.
8. Total load column limits joist deflection to L/180. For stiffer total load deflection criteria, check L/240 column at total load.

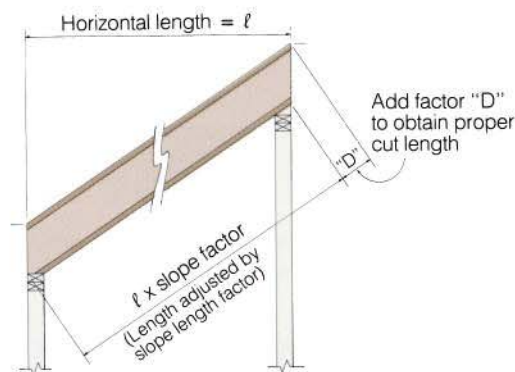
Note: Some codes may require a L/240 live load deflection limit; check L/240 column at live load.
Check your local code for roof deflection criteria.

9. For roof slopes greater than 2"/12," consideration must be given to the increased dead load and deflection caused by actual sloped length. Multiply the horizontal clear span by the slope factor from the "Slope Factor Table" to determine the joist span.

SLOPE FACTOR TABLE

SLOPE	FACTOR
2 1/2 in 12	1.022
3 in 12	1.031
3 1/2 in 12	1.042
4 in 12	1.054
4 1/2 in 12	1.068
5 in 12	1.083
6 in 12	1.118
7 in 12	1.158
8 in 12	1.202
9 in 12	1.250
10 in 12	1.302
11 in 12	1.357
12 in 12	1.414

TJI® JOIST CUT LENGTH CALCULATION



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

SLOPE	"D" FACTOR	
	9 1/2"	11 7/8"
2 1/2 in 12	2"	2 1/2"
3 in 12	2 3/8"	3"
3 1/2 in 12	2 7/8"	3 1/2"
4 in 12	3 1/4"	4"
4 1/2 in 12	3 5/8"	4 1/2"
5 in 12	4"	5"
6 in 12	4 3/4"	6"
7 in 12	5 5/8"	7"
8 in 12	6 3/8"	8"
9 in 12	7 1/8"	9"
10 in 12	8"	10"
11 in 12	8 3/4"	11"
12 in 12	9 1/2"	11 7/8"

TJI®/15 SP JOIST HOLE CHARTS – ROUND, SQUARE AND RECTANGULAR HOLES

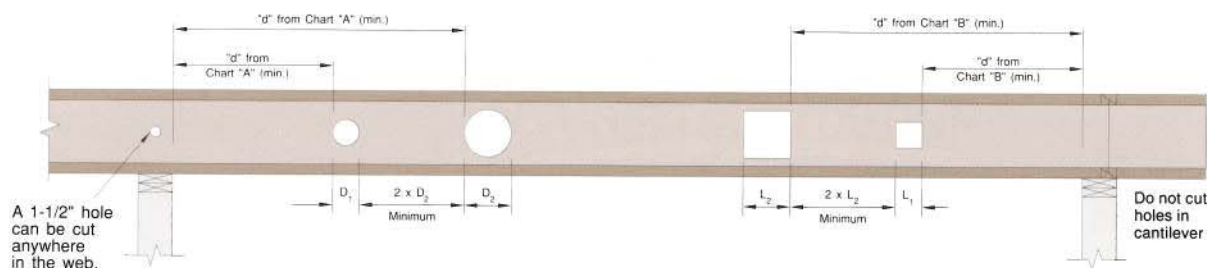


CHART A — ROUND HOLES

MINIMUM DISTANCE (d) FROM INSIDE FACE OF ANY SUPPORT TO NEAREST EDGE OF HOLE

	MAXIMUM ROUND HOLE SIZE								
	2"	3"	4"	5"	6"	6 1/4"	7"	8"	8 5/8"
9 1/2" TJI®/15 SP	1'-0"	2'-6"	3'-6"	6'-0"	8'-0"	8'-6"	—	—	—
11 7/8" TJI®/15 SP	1'-0"	1'-0"	1'-0"	2'-0"	4'-0"	4'-0"	6'-6"	8'-0"	9'-6"

CHART B — SQUARE OR RECTANGULAR HOLES

MINIMUM DISTANCE (d) FROM INSIDE FACE OF ANY SUPPORT TO NEAREST EDGE OF HOLE

	MAXIMUM SQUARE OR RECTANGULAR HOLE SIZE*								
	2"	3"	4"	5"	6"	6 1/4"	7"	8"	8 5/8"
9 1/2" TJI®/15 SP	2'-6"	5'-0"	6'-0"	6'-6"	—	—	—	—	—
11 7/8" TJI®/15 SP	1'-0"	2'-0"	4'-0"	6'-0"	7'-0"	7'-0"	8'-0"	9'-0"	—

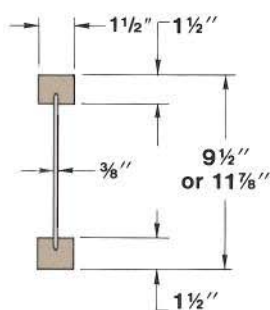
*NOTE: Rectangular holes based on measurement of longest side.

NOTES:

1. If more than one hole is to be cut in the web, the length of the uncut web between holes must be twice the length of the longest dimension of the largest adjacent hole. Holes may be located vertically anywhere within the web.
2. TJI® joists are manufactured with 1 1/2" perforated "knockouts" in the web at approximately 12" on center along the length of the joist.
3. The distances in the hole charts are based on uniformly loaded joists using maximum loads shown for any of the tables listed within this Specifier's Guide. For other load conditions, contact your Trus Joist MacMillan Representative.

FULL DEPTH RECTANGULAR HOLES ARE ALSO ALLOWED. CONTACT YOUR TRUS JOIST MACMILLAN REPRESENTATIVE FOR ASSISTANCE.

TJI®/15 SP DESIGN PROPERTIES (100% Load Duration)



TJI®/15 SP	Joist Depth (in.)	Weight (lbs./foot)	EI 10 ⁶ in ² lbs.	Max. Vertical Shear (lbs.)	Maximum Reaction (lbs.)		Max. Resistive Moment (ft.-lbs.)
					End Bearing	Intermediate Bearing	
	9 1/2"	2.1	164	1120	940	2090	2860
	11 7/8"	2.4	286	1420	940	2090	3800

NOTE:

- 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-200 and these increases are reflected in span tables.
- The reaction values above are based on an assumed minimum bearing length of 1 3/4" at ends, 3 1/2" at intermediate supports.

The following formula approximates the uniform load deflection of Δ:

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

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

MATERIAL WEIGHTS

TJI®/15 SP

9 1/2" 2.1 PLF
 11 7/8" 2.4 PLF

Pine Sheathing*

(Based on 40 pcf)

1/2" plywood	1.7 psf
5/8" plywood	2.0 psf
3/4" plywood	2.5 psf
1 1/8" plywood	3.8 psf
1/2" OSB	1.8 psf
5/8" OSB	2.2 psf
3/4" OSB	2.7 psf
1 1/8" OSB	4.1 psf

*For Douglas Fir weights, decrease pine weights by 10%.

Roofing Materials

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

Roll or Batt Insulation

Rock Wool	(1" thick) 0.2 psf
Glass Wool	(1" thick) 0.1 psf

Floors

Hardwood (Nominal 1")	4.0 psf
Concrete (1" thick)	
Regular	12.0 psf
Lightweight	6.0 to 10.0 psf
Sheet vinyl	0.2 psf
Carpet and pad	0.6 psf
3/4" ceramic or quarry tile	10.0 psf
Gypsum concrete (3/4")	6.5 psf

Ceilings

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

**Legacy Literature
See Note on Front Cover**

Trus Joist MacMillan now offers a product line that includes both Douglas Fir and Southern Pine species. Some of these products have different properties and capacities. The map below indicates the general distribution of each species, although some overlap may occur. To be sure the product you specify is readily available in your project's location, contact your local Trus Joist MacMillan representative, or call 1-800-338-0515 for the representative near you. The regional offices listed below represent over 175 technical representatives throughout North America.

PRODUCT DISTRIBUTION

DOUGLAS FIR



SOUTHERN PINE



Canadian Operations

1 Trus Joist MacMillan Canada Ltd.
10277-154 Street
★ Surrey, British Columbia
Canada V3R 0N0
(604) 588-7878

2 Trus Joist MacMillan Canada Ltd.
#210, 10335 178 Street
Edmonton, Alberta
Canada T5S 1R5
(403) 489-8800

3 Trus Joist MacMillan Canada Ltd.
86 Guided Court
Suite #10
Rexdale, Ontario
Canada M9V 4K6
(416) 740-1427

4 Trus Joist MacMillan Canada Ltd.
6363 Trans Canada Highway
Unit 113
St. Laurent, Quebec
Canada H4T 1Z9
(514) 744-0576

Western Operations

★ Trus Joist MacMillan
3210 East Amity Road
Boise, Idaho 83705
(208) 343-7771

5 Trus Joist MacMillan
10130 SW Nimbus, Suite D3
Portland, Oregon 97223
(503) 620-9490

6 Trus Joist MacMillan
4125 Mohr Avenue, Suite G-H
Pleasanton, California 94566
(415) 484-3930

7 Trus Joist MacMillan
819 W. Striker, Suite 1
Sacramento, California 95834
(916) 454-2545

Pacific Inland Operations

★ Trus Joist MacMillan
2600 East Amity Road
Boise, Idaho 83706
(208) 343-7772

8 Trus Joist MacMillan
2100 W. Orangewood Ave.,
Suite 150
Orange, California 92668
(714) 937-5055

9 Trus Joist MacMillan
14125 Telephone Ave., Suite D5
Chino, California 91710
(714) 628-6772

10 Trus Joist MacMillan
2090 South Cole Road
Boise, Idaho 83709
(208) 322-4931

11 Trus Joist MacMillan
5600 S. Quebec Street, Suite 250B
Englewood, Colorado 80111
(303) 770-6262

Atlantic Central Operations

12 Trus Joist MacMillan
2965 E. Dublin-Granville Rd., Suite B
★ Columbus, Ohio 43231
(614) 882-5840

13 Trus Joist MacMillan
1811 W. Diehl Road, Suite 700
Naperville, Illinois 60563
(708) 369-5000

14 Trus Joist MacMillan
548 Donald Street, #5
Bedford, New Hampshire 03102
(603) 647-9236

15 Trus Joist MacMillan
4550 W. 77th Street, Suite 224
Edina, Minnesota 55435
(612) 896-1115

16 Trus Joist MacMillan
104 Centre Boulevard, Suite A
Marlton, New Jersey 08053
(609) 596-5555

17 Trus Joist MacMillan
1645 Murfreesboro Road, Suite I
Nashville, Tennessee 37217
(615) 399-2184

★ Eastern Operations
Trus Joist MacMillan
6000 Live Oak Parkway, Suite 111A
Norcross, Georgia 30093
(404) 263-8440

18 Trus Joist MacMillan
1101 Woodridge Center Dr.
Suite 114
Charlotte, North Carolina 28217
(704) 357-3291

19 Trus Joist MacMillan
5444 Bay Center Drive, Suite 200
Tampa, Florida 33609
(813) 286-2665

★ Indicates Operations Group General Offices



TRUS JOIST MACMILLAN

A Limited Partnership

9777 West Chinden Blvd. (83714)

P.O. Box 60 Boise, Idaho 83707

(208) 375-4450

Call for the dealer nearest you:

1-800-338-0515

CODE EVALUATIONS: FHA 689, FHA 925, NER 119, NER 126.

NOTE: NER Evaluation includes BOCA, ICBO and SBCCI.

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