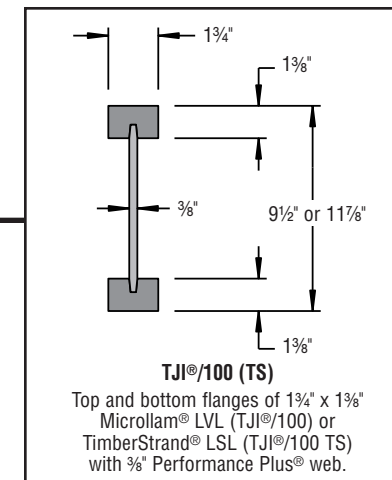


# e-I Joist™

## Design and Installation Guide

For Residential Floors using **TJI®/100** and **TJI®/100TS** Joists

The e-I Joist™ is intended for use in floor applications only. For other value-added Trus Joist products, contact your dealer or visit our website at [www.trusjoist.com](http://www.trusjoist.com)



Code Evaluation: ICBO ES PFC-4354

### Design Properties

TJI®/100 (TS) Joist Depth	Basic Properties			Reaction Properties		
	Joist Weight (lbs/ft)	Maximum Resistive Moment (ft-lbs)	Joist Only EI x 10 <sup>6</sup> (in. <sup>2</sup> lbs)	Maximum Vertical Shear (lbs)	Maximum End Reaction (lbs)	Maximum Intermediate Reaction (lbs)
9 1/2"	2.1	2005	123	1045	855	1715
11 7/8"	2.3	2660	210	1325	855	1715

### 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 these increases are reflected in span tables.
- The reaction values (without web stiffeners) are based on assumed minimum bearing lengths of 1 1/4" at ends and 3 1/2" at intermediate supports.
- Values shown throughout this guide 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

### Floor Spans

40 psf Live Load, 10 psf Dead Load, L/480 Live Load Deflection

TJI®/100 (TS) Joist Depth	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9 1/2"	15'-9"	14'-5"	13'-7"	12'-8"
11 7/8"	18'-9"	17'-1"	16'-2"	13'-7"

### GENERAL NOTES

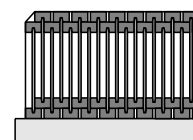
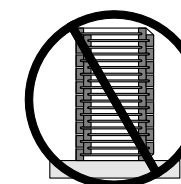
- Table is based on:
  - Assumed composite action with a single layer of appropriate span-rated glue-nailed sheathing for deflection only (**spans shall be reduced 5" when sheathing panels are nailed only**).
  - Uniformly loaded joists.
  - Most restrictive of simple or continuous span.
- Increase for repetitive member use has been included.
- Spans shown are clear distance between supports.
- Long term deflection under dead load which includes the effect of creep, common to all wood members, has not been considered.

FOR MORE INFORMATION, CONTACT YOUR DEALER



1-800-626-6144  
[www.trusjoist.com](http://www.trusjoist.com)

### Jobsite Storage



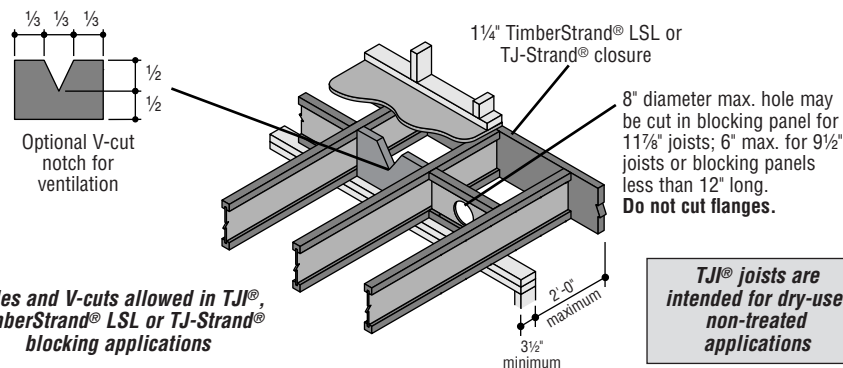
Store joists in vertical orientation. Protect products from sun and water.



Use stickers at 10' o.c. to keep products out of mud and water

### Cantilevers

#### Cantilevers Supporting Bearing Walls



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

Holes and V-cuts allowed in TJI®, TimberStrand® LSL or TJ-Strand® blocking applications

#### Load Bearing Cantilevers (24" Maximum)

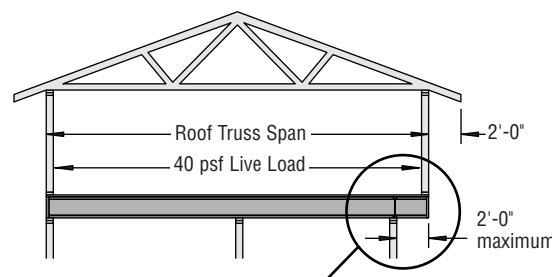
TJI®/100 (TS) Joist Depth	Roof Truss Span	Roof Total Load								
		35 psf		45 psf		55 psf				
		12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"
9 1/2"	24'	OK	OK	OK	OK	OK	X	OK	X	X
	26'	OK	OK	X	OK	X	X	OK	X	X
	28'	OK	OK	X	OK	X	X	OK	X	X
	30'	OK	OK	X	OK	X	X	X	X	X
	32'	OK	OK	X	OK	X	X	X	X	X
11 7/8"	26'	OK	OK	X	OK	X	X	OK	X	X
	28'	OK	OK	X	OK	X	X	OK	X	X
	30'	OK	OK	X	OK	X	X	X	X	X
	32'	OK	X	X	OK	X	X	X	X	X
	34'	OK	X	X	OK	X	X	X	X	X

X - Will not work.

### GENERAL NOTES

Table is based on:

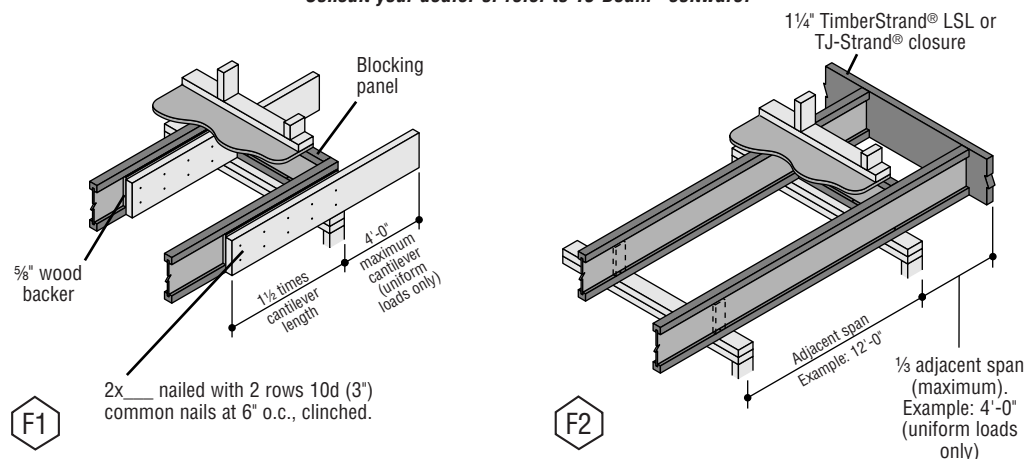
- 15 psf roof dead load.
- 80 plf exterior wall load with 3'-0" maximum width window or door openings. For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" on-center, additional joists beneath the opening's trimmers may be required.
- TimberStrand® LSL or spruce-pine-fir bearing plate or equivalent.
- Roof truss with 24" soffits.



TJI® joists may be cantilevered up to a maximum of 2'-0" when supporting roof load as shown in table.

#### Cantilevers Not Supporting Bearing Walls

TJI® joists are permitted to be cantilevered up to 1/3 the adjacent span if not supporting concentrated loads on the cantilever. Cantilevers exceeding 4 feet may require special consideration. Consult your dealer or refer to TJ-Beam® software.



F1

F2

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NW0800/10M

**e-I Joist™**  
A Weyerhaeuser Business

**WARNING**  
JOISTS ARE UNSTABLE UNTIL BRACED LATEROALLY

**BRACING INCLUDES:**  
• Blocking • Strut Lines • Rim Board  
• Hangers • Sheathing • Rim Joist

- DO NOT allow workers to walk on joists until braced
- DO NOT stack building materials on unbraced joists
1. Install all blocking, hangers, rim boards and rim joists at TJI® joist end supports.
  2. Establish a permanent deck (sheathing), nailed to the first 4 feet of joists at the end of the bay or braced end wall.
  3. Temporary strut lines of 1x4 (minimum) must be nailed to a braced end wall or sheathed area.
  4. Sheathing must be properly nailed 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. TJI® joist flanges must remain straight within 1/2" from true alignment.
- Lack of proper bracing during construction can result in serious accidents. Under normal conditions if the following guidelines are observed, accidents will be avoided.

La Seguridad Ante Todo  
ADVERTENCIA  
Por Favor Lea Cuidadosamente

Las viguetas son inestables hasta que se refuerzan lateralmente. Vea la guía de instalaciones antes de instalar las viguetas TJI®. No permita que los trabajadores caminen sobre las viguetas TJI® antes de ser reforzadas lateralmente. No ponga materiales de construcción sobre las viguetas TJI® antes de instalar el triplay. Coloque los materiales únicamente sobre vigas o muros.

### 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.

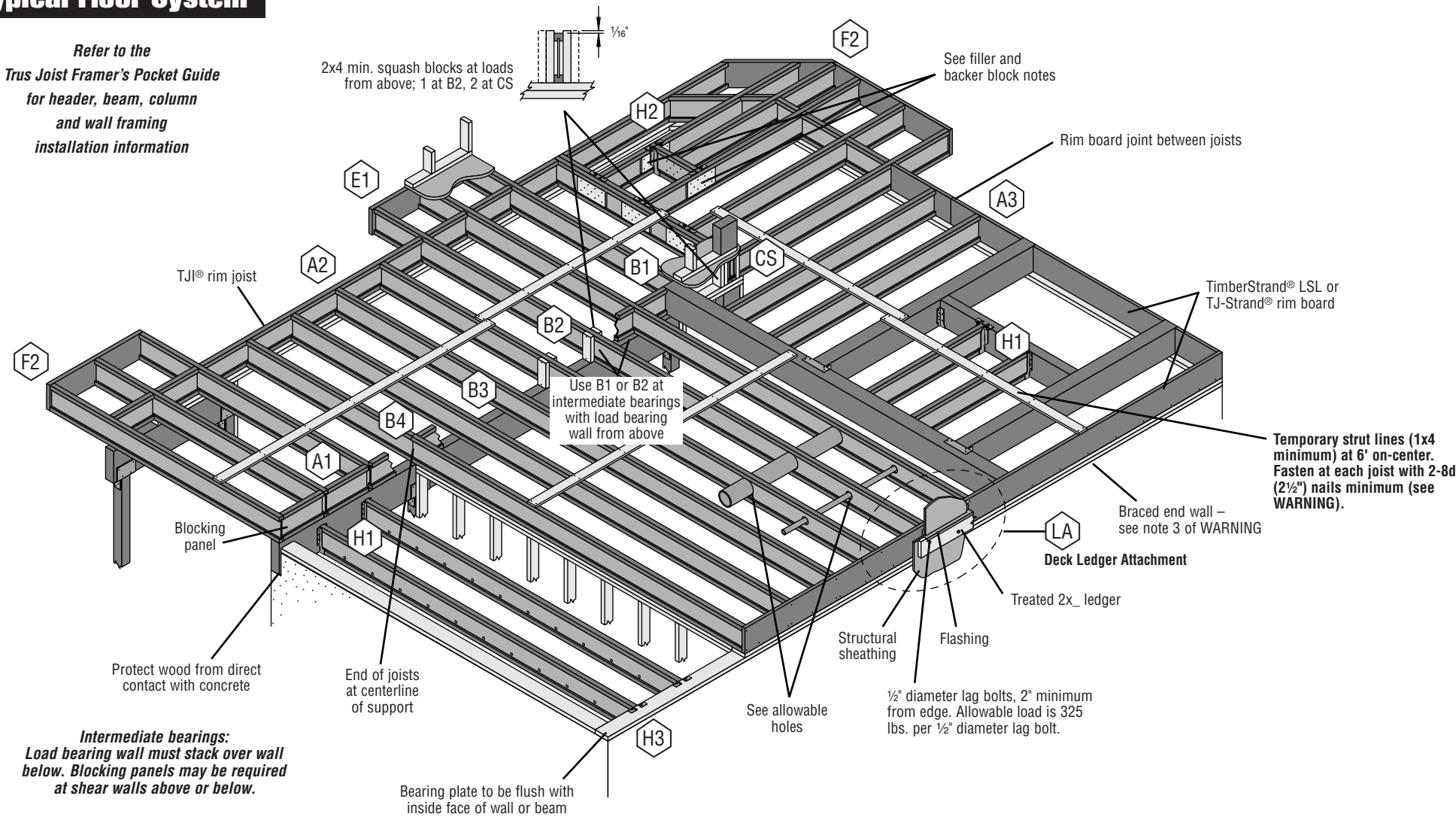
200 E. Malheur Drive • Boise, Idaho 83706  
1-800-626-6144

Trus Joist  
A Weyerhaeuser Business

IMPORTANT: Please read carefully!

## Typical Floor System

Refer to the *Trus Joist Framers' Pocket Guide* for header, beam, column and wall framing installation information



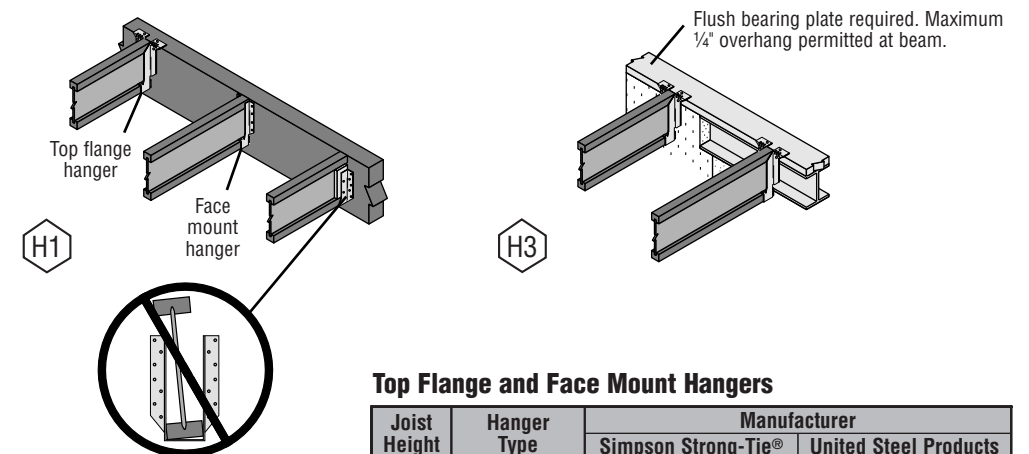
## Framing Connectors

### GENERAL NOTES

- Approved hangers:
  - Simpson Strong-Tie® Company, Inc. 1-800-999-5099
  - United Steel Products Company 1-800-328-5934 (MN) or 1-800-227-0470 (CA)
- 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.
- Leave 1/16" clearance between the end of the supported joist and the header or hanger.

### NAILING REQUIREMENTS

- Fill all round holes.
  - Header: 10d x 1 1/2" nails minimum. Top flange hangers require 10d x 1 1/2" nails for TJI® joist headers or 2x\_nailers.
  - Joist: 10d x 1 1/2"
- Full nail penetration (1 1/2") required.
- Nails into bottom flange of joist must be angled.



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

### Top Flange and Face Mount Hangers

Joist Height	Hanger Type	Manufacturer	
		Simpson Strong-Tie®	United Steel Products
9 1/2"	Top Flange	ITT9.5	TH017950
	Face Mount	IUT9	THF17925
11 1/8"	Top Flange	ITT11.88	TH017118
	Face Mount	IUT11	THF17112

## Joist Bearing and Nailing – A B

### GENERAL NOTES

#### 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
    - 1 1/4" TimberStrand® LSL or 1 1/4" TJ-Strand® rim board . .4250 plf
- Loads shown may not be increased for duration of load.

- Bracing complying with the code shall be carried to the foundation.

#### NAILING REQUIREMENTS

##### To bearing plate:

**TJI® blocking panels or rim joist:** 10d (3") box nails at 6" on-center.

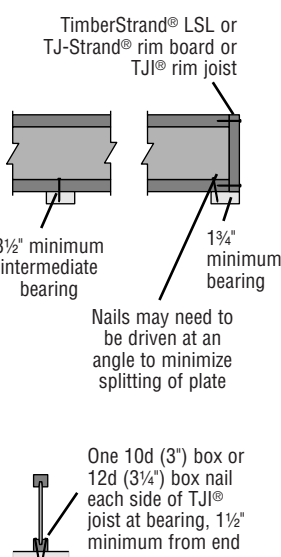
**TimberStrand® LSL or TJ-Strand® rim board:** Toenail with 10d (3") box nails at 6" on-center or 16d (3 1/2") box nails at 12" on-center.

**Shear transfer:** Connections equivalent to decking nail schedule.

##### To TJI® joist:

**1 3/4" width or less rim board or rim joist:** 2-10d (3") box nails, one each at top and bottom flange.

**2x4 squash blocks:** 2-10d (3") box nails, one each at top and bottom flange.



## Filler and Backer Blocks

With top flange hangers, backer block required only for downward loads exceeding 250 pounds or for uplift conditions.

**Double TJI® joist filler block.** Attach 2x6 filler block with 10-10d (3") box nails, clinched.

Backer block both sides of web with single TJI® joist

H2

#### Hanger Backer Block

Install tight to top flange (tight to bottom flange with face mount hangers).

- Attach with 10-10d (3") box nails, clinched when possible.
- If necessary, increase filler and backer block height for face mount hangers. Maintain 1/8" gap at top of joist.
- Filler and backer block dimensions should accommodate required nailing without splitting.
- Backer block thickness to be 5/8" or 3/4".

## Fastening of Sheathing

### Closest On-Center Spacing Per Row

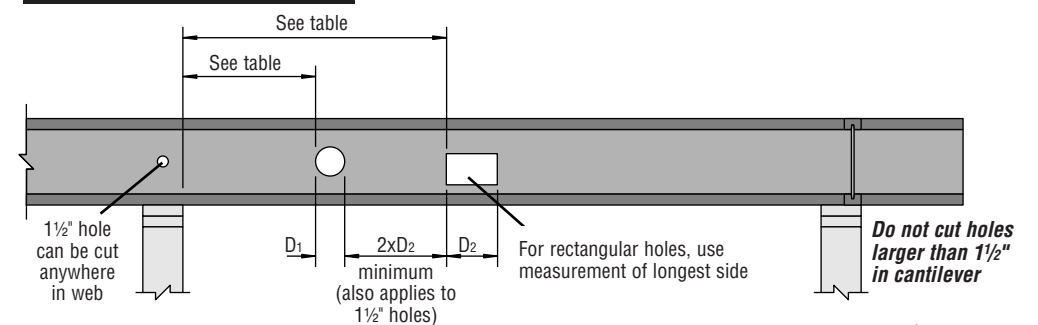
Nail Size	TJI®/100 (TS)
8d (2 1/2") Box	2 1/2"
8d (2 1/2") Common	3 1/2"
10d (3"), 12d (3 1/4") Box	3"
10d (3"), 12d (3 1/4") Common	4 1/2"
16d (3 1/2") Common	N.A. <sup>(1)</sup>

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

### GENERAL NOTES

- Maximum spacing of nails is 12" on-center.
- If more than one row of nails is used, the rows must be offset at least 1/2" and staggered.
- 14 ga. staples may be substituted for 8d (2 1/2") nails if minimum penetration of 1" into the TJI®/100 (TS) joists or rim board is achieved.
- Table also applies for the attachment of TJI®/100 (TS) rim joists and blocking panels to the wall plate.

## Allowable Holes



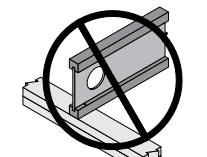
- Leave 1/8" web at top and bottom of hole. **DO NOT** cut joist flanges.

- Table is based on uniform loads.

- For simple span (5 foot minimum) uniformly loaded joists, one maximum size round hole may be located at the center of the joist span **provided no other holes occur in the joist.**

#### Minimum Distance From Inside Face Of Any Support To Nearest Edge Of Hole

TJI®/100 (TS) Joist Depth	Round Hole Size							
	2"	3"	4"	5"	6 1/4"	7"	8"	8 5/8"
9 1/2"	1'-0"	2'-0"	2'-6"	3'-6"	6'-6"			
11 1/8"	1'-0"	1'-0"	1'-0"	2'-0"	3'-0"	4'-0"	5'-6"	7'-0"
TJI®/100 (TS) Joist Depth	Square Hole Size							
	2"	3"	4"	5"	6 1/4"	7"	8"	8 5/8"
9 1/2"	1'-0"	2'-0"	3'-0"	5'-0"	6'-6"			
11 1/8"	1'-0"	1'-0"	2'-0"	3'-6"	6'-0"	6'-6"	7'-6"	8'-6"



Maintain adequate distance from bearings



Cut holes with care and in the joist web only