

# Framer's Pocket Guide to the FrameWorks® Building System

**CONTAINS  
FRAMING  
DETAILS  
FOR FLOOR  
AND ROOF**

La Sécurité Avant Tout  
**AVERTISSEMENT**

**Veillez Lire  
Attentivement**

Les solives sont instables si elles ne sont pas contreventées et en position verticale. Voir le guide d'installation *avant* la pose des solives TJI®.

Ne pas circuler sur les solives TJI® *avant* qu'elles ne soient adéquatement contreventées.

Il est dangereux de déposer des matériaux de construction sur les solives TJI® si le sous-plancher n'est pas installé.



## WARNING

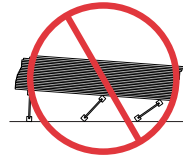
### JOISTS ARE UNSTABLE UNTIL BRACED LATERALLY



**DO NOT** allow workers to walk on joists until braced. Injury may result.

#### BRACING INCLUDES:

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



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

*This guide is intended for the products shown, in dry-use, untreated conditions.*

## FEATURING

TJI® 110

TJI® 210

TJI® 230

TJI® 360

TJI® 560

Joists

## IMPORTANT: Please read carefully!

La Seguridad Ante Todo  
**ADVERTENCIA**

**Por Favor Lea  
Cuidadosamente**

Las viguetas son inestables hasta que se refuercen 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 triplax. Coloque los materiales únicamente sobre vigas o muros.

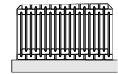
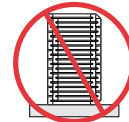
### JOISTS ARE UNSTABLE UNTIL BRACED LATERALLY

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

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

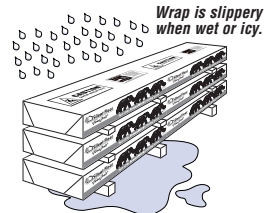
1. Install all blocking, hangers, rim boards, and rim joists at TJI® joist end supports.
2. Establish a permanent deck (sheathing), nailed to the first 4 feet of joists at the end of the bay or braced end wall.
3. Safety bracing of 1x4 (minimum) must be nailed to a braced end wall or sheathed area.
4. Sheathing must be properly nailed to each TJI® joist before additional loads can be placed on the system.
5. Ends of cantilevers require safety bracing on both the top and bottom flanges.
6. TJI® joist flanges must remain straight within 1/2" from true alignment.

### Jobsite Storage



**Store and handle joists in vertical orientation.**

**Protect products from sun and water.**



**Use support blocks at 10' on-center to keep products out of mud and water.**

## FLOOR

Allowable Holes —

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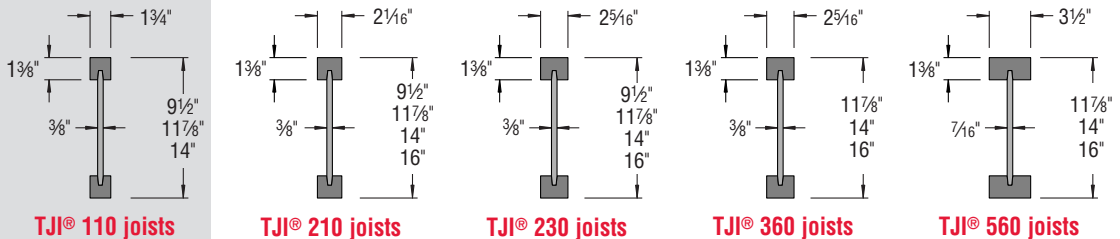
### BUILD SAFELY

We at Trus Joist are committed to working safely and want to remind you to do the same. We encourage you to follow the recommendations of OSHA ([www.osha.gov](http://www.osha.gov)) in the U.S. or provincial regulations ([www.canoshrweb.org/en/](http://www.canoshrweb.org/en/)) in Canada regarding:

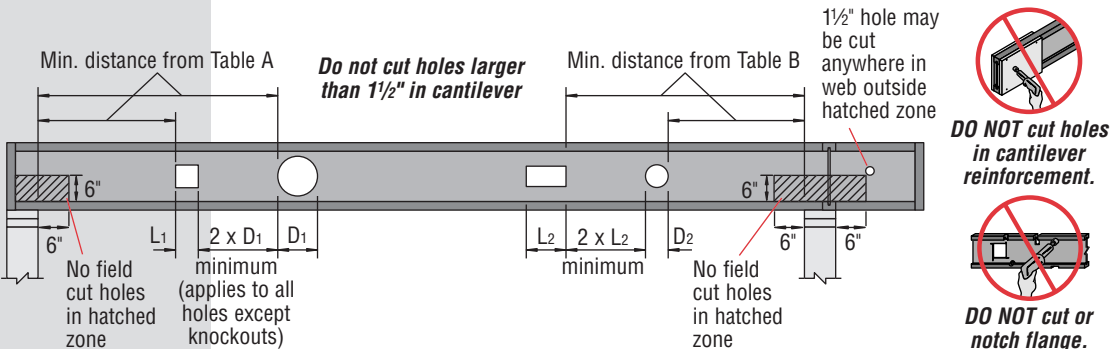
- Personal protective equipment (PPE) for hands, feet, head, and eyes
- Fall protection
- Use of pneumatic nailers and other hand tools
- Forklift safety

Please adhere to the Trus Joist product installation details, including the installation of safety bracing on unheated floors and roofs.

## Product Identification



## Allowable Holes – TJI® Joists *Does not apply to vented 16" joists*



**Table A—End Support**  
Minimum distance from edge of hole to inside face of nearest end support

Joist Depth	TJI®	Round Hole Size							Square or Rectangular Hole Size						
		2"	3"	4"	6½"	8½"	11"	13"	2"	3"	4"	6½"	8½"	11"	13"
9½"	110	1'-0"	1'-6"	2'-0"	5'-0"				1'-0"	1'-6"	2'-6"	4'-6"			
	210	1'-0"	1'-6"	2'-0"	5'-0"				1'-0"	2'-0"	2'-6"	5'-0"			
	230	1'-0"	2'-0"	2'-6"	5'-6"				1'-0"	2'-0"	3'-0"	5'-0"			
	360	1'-6"	2'-0"	3'-0"	6'-0"				1'-6"	2'-6"	3'-6"	5'-6"			
11⅞"	110	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"			1'-0"	1'-0"	1'-6"	4'-6"	6'-0"		
	210	1'-0"	1'-0"	1'-0"	2'-6"	5'-6"			1'-0"	1'-0"	2'-0"	5'-0"	6'-6"		
	230	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"			1'-0"	1'-0"	2'-0"	5'-6"	7'-0"		
	360	1'-0"	1'-0"	1'-6"	4'-6"	7'-0"			1'-0"	1'-0"	2'-6"	6'-6"	7'-6"		
	560	1'-0"	1'-0"	1'-6"	5'-0"	8'-0"			1'-0"	2'-0"	3'-6"	7'-0"	8'-0"		
14"	110	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"		1'-0"	1'-0"	1'-0"	3'-6"	6'-0"	8'-0"	
	210	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"		1'-0"	1'-0"	1'-0"	4'-0"	6'-6"	8'-6"	
	230	1'-0"	1'-0"	1'-0"	1'-6"	3'-6"	6'-6"		1'-0"	1'-0"	1'-0"	4'-0"	7'-0"	9'-0"	
	360	1'-0"	1'-0"	1'-0"	2'-6"	5'-6"	8'-0"		1'-0"	1'-0"	1'-0"	5'-6"	8'-0"	9'-6"	
	560	1'-0"	1'-0"	1'-0"	2'-6"	6'-0"	9'-0"		1'-0"	1'-0"	1'-6"	6'-6"	9'-0"	10'-0"	
16"	210	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	3'-6"	6'-0"	1'-0"	1'-0"	1'-0"	2'-6"	6'-6"	8'-0"	10'-6"
	230	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	4'-0"	6'-6"	1'-0"	1'-0"	1'-0"	3'-0"	7'-0"	9'-0"	11'-0"
	360	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	6'-0"	9'-0"	1'-0"	1'-0"	1'-0"	4'-0"	9'-0"	10'-0"	11'-6"
	560	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	6'-6"	10'-0"	1'-0"	1'-0"	1'-0"	5'-0"	10'-0"	11'-0"	12'-0"

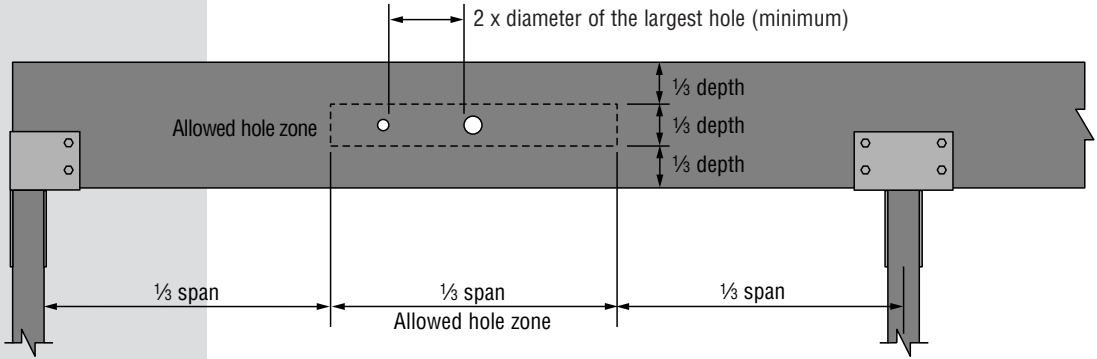
**Table B—Intermediate or Cantilever Support**  
Minimum distance from edge of hole to inside face of nearest intermediate or cantilever support

Joist Depth	TJI®	Round Hole Size							Square or Rectangular Hole Size						
		2"	3"	4"	6½"	8½"	11"	13"	2"	3"	4"	6½"	8½"	11"	13"
9½"	110	1'-6"	2'-6"	3'-0"	7'-6"				1'-6"	2'-6"	3'-6"	6'-6"			
	210	2'-0"	2'-6"	3'-6"	7'-6"				2'-0"	3'-0"	4'-0"	7'-0"			
	230	2'-6"	3'-0"	4'-0"	8'-0"				2'-6"	3'-0"	4'-6"	7'-6"			
	360	3'-0"	4'-0"	5'-6"	9'-0"				3'-0"	4'-6"	5'-6"	8'-0"			
11⅞"	110	1'-0"	1'-0"	1'-6"	4'-0"	8'-0"			1'-0"	1'-6"	2'-6"	6'-6"	9'-0"		
	210	1'-0"	1'-0"	2'-0"	4'-6"	9'-0"			1'-0"	2'-0"	3'-0"	7'-6"	10'-0"		
	230	1'-0"	2'-0"	2'-6"	5'-0"	9'-6"			1'-0"	2'-6"	3'-6"	8'-0"	10'-0"		
	360	2'-0"	3'-0"	4'-0"	7'-0"	11'-0"			2'-0"	3'-6"	5'-0"	9'-6"	11'-0"		
	560	1'-6"	3'-0"	4'-6"	8'-0"	12'-0"			3'-0"	4'-6"	6'-0"	10'-6"	12'-0"		
14"	110	1'-0"	1'-0"	1'-0"	2'-0"	4'-6"	8'-0"		1'-0"	1'-0"	1'-0"	5'-0"	9'-0"	12'-0"	
	210	1'-0"	1'-0"	1'-0"	2'-6"	5'-0"	9'-0"		1'-0"	1'-0"	2'-0"	6'-0"	10'-0"	12'-6"	
	230	1'-0"	1'-0"	1'-0"	3'-0"	5'-6"	10'-0"		1'-0"	1'-0"	2'-6"	6'-0"	10'-6"	13'-0"	
	360	1'-0"	1'-0"	2'-0"	5'-6"	8'-6"	12'-6"		1'-0"	2'-0"	4'-0"	9'-0"	12'-0"	14'-0"	
	560	1'-0"	1'-0"	1'-6"	5'-6"	9'-6"	13'-6"		1'-0"	3'-0"	5'-0"	10'-0"	13'-6"	15'-0"	
16"	210	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	5'-6"	9'-6"	1'-0"	1'-0"	1'-0"	4'-6"	9'-6"	12'-6"	15'-6"
	230	1'-0"	1'-0"	1'-0"	1'-6"	4'-0"	6'-6"	10'-6"	1'-0"	1'-0"	1'-0"	5'-0"	10'-6"	13'-0"	16'-0"
	360	1'-0"	1'-0"	1'-0"	3'-0"	6'-6"	10'-0"	13'-6"	1'-0"	1'-0"	2'-0"	7'-6"	13'-0"	14'-6"	17'-0"
	560	1'-0"	1'-0"	1'-0"	2'-6"	7'-0"	11'-0"	15'-0"	1'-0"	1'-0"	3'-6"	9'-0"	14'-6"	16'-0"	18'-0"

- Leave ⅛" web at top and bottom of hole. **DO NOT cut joist flanges.**
- Table is based on uniform load tables in current design literature.
- For simple-span (5' minimum), uniformly loaded joists not requiring commercial concentrated loads, one maximum size round hole may be located in the center of the joist span **provided no other holes occur in the joist.**

## 2 Allowable Holes –

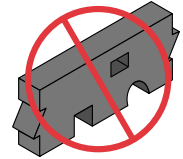
### TimberStrand® LSL, Parallam® PSL, Microllam® LVL Beams and Headers



- For uniformly loaded beams only.
- Rectangular holes are not allowed.
- No holes in cantilevers.
- No holes in headers or beams in plank orientation.

Round Hole Chart

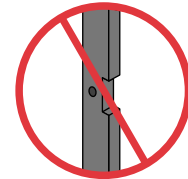
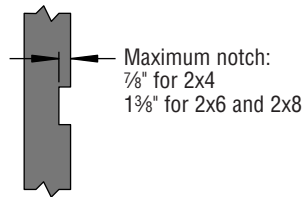
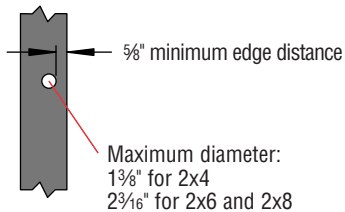
Beam Depth	Maximum Round Hole Size
4 $\frac{3}{8}$ "	1"
5 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "
7 $\frac{1}{4}$ " to 20"	2"



*Cut only round holes and only in the center of beam.*

### Allowable Holes – TimberStrand® LSL Wall Studs

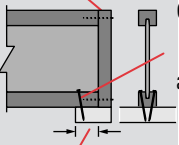
*The notch shown may be cut anywhere except the middle 1/3 of the length of the stud*



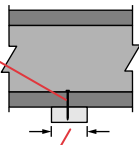
### TJI® Joist Nailing Requirements at Bearing

## Connections to Bearing Plate

Trus Joist rim board



One 8d (2½") box nail each side. Drive nails at an angle at least 1½" from end.



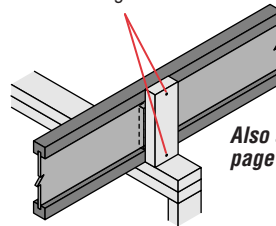
- 1¾" minimum end bearing for single family applications
- 2¼" minimum end bearing for multi-family applications

- 3½" minimum intermediate bearing
- 5¼" may be required for maximum capacity

**Shear transfer:** Connections equivalent to deck nailing schedule. See page 4.

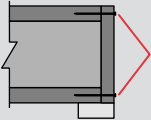
## Squash Blocks to TJI® Joist (Load bearing wall above)

One 10d (3") box nail into each flange



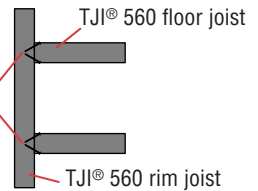
*Also see detail B2, page 5*

## Rim to TJI® Joist



**Trus Joist rim board or TJI® 110 rim joist:**  
One 10d (3") box nail into each flange  
**TJI® 210, 230, and 360 rim joist:**  
One 16d (3½") box nail into each flange

**TJI® 560 rim joist:**  
Toenail with 10d (3") box nails, one each side of TJI® joist flange



*Top View*

# FrameWorks® Floor System

## FrameWorks® FLOOR SYSTEM COMPONENTS

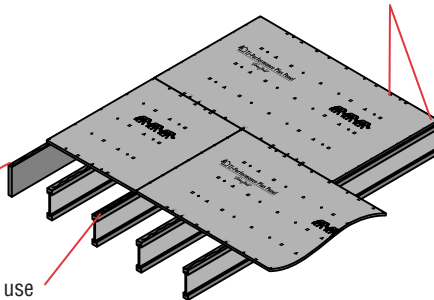
- TJI®-Performance Plus® floor panels
- TJI® joists
- Trus Joist rim board

## ADHESIVE RECOMMENDATIONS

- Adhesives must meet the requirements of ASTM D 3498 (AFG-01), and they must have a minimum dry shear strength of 350 psi. For more information, contact your Trus Joist technical representative.

Use a ¼" or larger bead of adhesive

At abutting panel edges use two ¼" beads of adhesive



Nail to joist at 12" on-center in field and 6" on-center along panel edges. Apply fasteners ¾" from panel edges.

- For ¾" panels, use 8d (2½") common or 6d (2") deformed-shank nails or other code-approved fasteners.
- For 7⁄8" panels, use 8d (2½") common or 8d (2½") deformed-shank nails or other code-approved fasteners.

- Fully nail floor panel within 10 minutes of applying adhesive or sooner if required by adhesive manufacturer.
- Screws may be substituted for nails (above) if they have equivalent lateral load capacity.

# 3 Silent Floor® Joist Framing

**Silent Floor® joist framing does not require bridging or mid-span blocking**

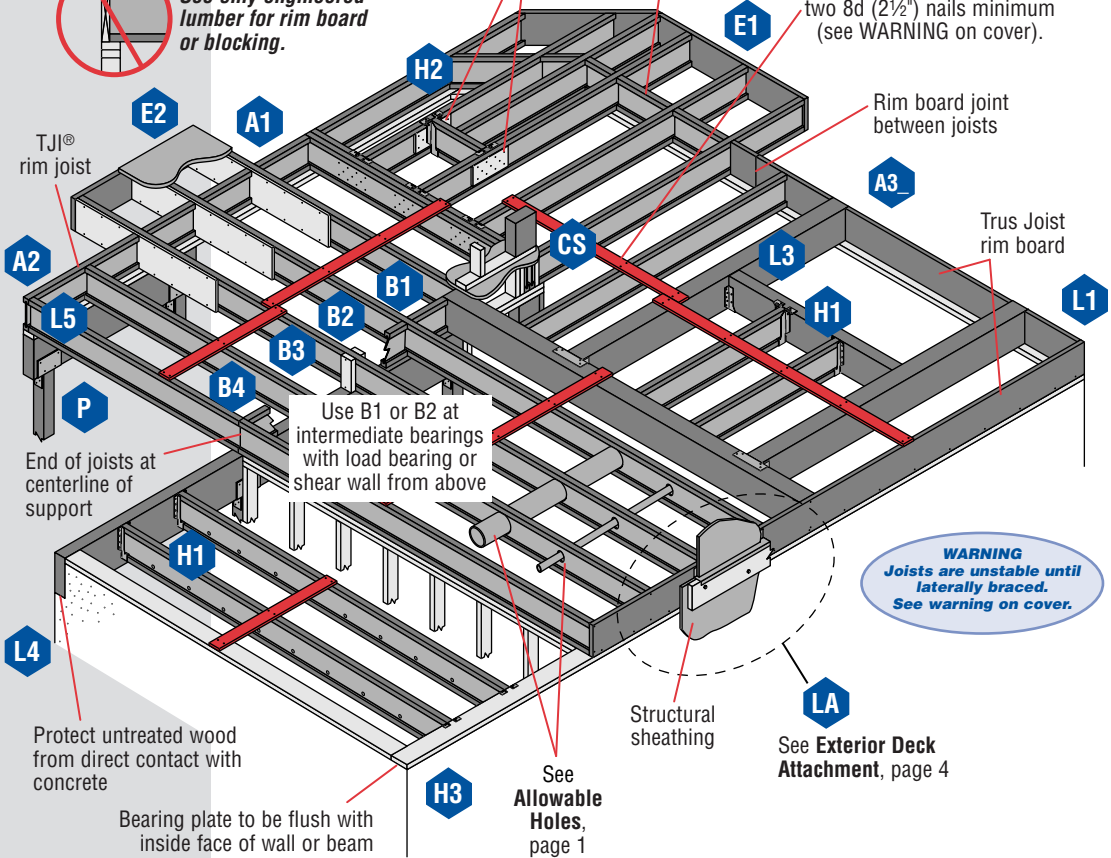


**Use only engineered lumber for rim board or blocking.**

See filler and backer block notes, page 5

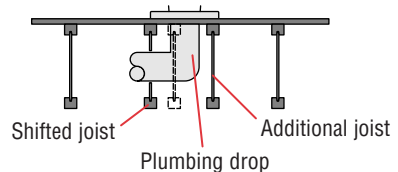
Blocking panel

Safety bracing (1x4 minimum) at 6' on-center and extended to a braced end wall. Fasten at each joist with two 8d (2½") nails minimum (see WARNING on cover).



## INSTALLATION TIPS

- Subfloor adhesive will improve floor performance, but may not be required.
- When joists are doubled at non-load bearing parallel partitions, space joists apart the width of the wall for plumbing or HVAC.
- Additional joist at plumbing drop (see detail above).
- Squash blocks and blocking panels carry stacked vertical loads (details B1 and B2). Packing out the web of a TJI® joist (with web stiffeners) is not a substitute for squash blocks or blocking panels.



## DETAIL SCHEDULE

### End bearings (see page 4)

- A1** with blocking panels
- A2** with TJI® rim joist
- A3** with rim board

### Intermediate bearings\* (see page 5)

- B1** with blocking panels to support load bearing wall above
- B2** with squash blocks to support load bearing wall above
- B3** without blocking panels or squash blocks (no wall above)

### Cantilever details (see page 5)

- E1** no reinforcement
- E1W** cantilever with reinforcement
- E2** ¾" reinforcement on one side
- E3** ¾" reinforcement both sides
- E4** joist reinforcement
- F1** deck cantilever
- PB1** permanent cantilever bracing

*\*Load bearing wall must stack over wall below. Blocking panels may be required at shear walls above or below.*

### Cantilever over brick ledge (see page 5)

- E5** ¾" reinforcement on one side
- E6** ¾" reinforcement both sides
- E7** ¾" reinforcement on one side, with 2x\_ blocking
- E8** ¾" reinforcement on both sides, with 2x\_ blocking

### Hanger details (more connector information on page 8)

- H1** TJI® joist to beam (see page 8)
- H2** TJI® joist to joist (see page 5)
- H3** TJI® joist on masonry wall or steel beam (see page 8)

### Other details

- B4** butting joists with blocking panels
- CS** column support (see page 4)
- LA** exterior deck attachment (see page 4)
- W** web stiffeners (see page 6)
- L** beam details (see page 9)
- P** column details (see page 9)

## TJ-Xpert® Framing Plans

**A<sub>X</sub>** At A1, joists require entire support width. At A2, A3 and A3.1–A3.4, “X” is rim board or rim joist thickness. Required joist bearing length = (full support width minus X).

**B<sub>W</sub>** Web stiffeners required on each side of joist at intermediate bearings. Refer to your TJ-Xpert® framing plan.

Bearing requirements as shown on the TJ-Xpert® framing plan are job-specific and supersede minimum bearing requirements listed.

## Fastening of Floor Panels

### Guidelines for Closest On-Center Spacing per Row

Nail Size	TJI®		Trus Joist rim board		TimberStrand® LSL 1½" or wider	Microllam® LVL	Parallam® PSL
	110 and 210	230, 360, and 560	1"	1¼"			
<b>8d (2½") common</b>	3½"	2"	6"	4"	3"	3"	3"
<b>10d (3") common</b>	4½"	3"	6"	4"	4"	4"	4"
<b>16d (3½") common</b>	N.A.	4"	16"	6 <sup>(1)</sup>	6 <sup>(1)</sup>	8"	6"

(1) Can be reduced to 4" on-center with maximum nail penetration of 1½" into the narrow edge

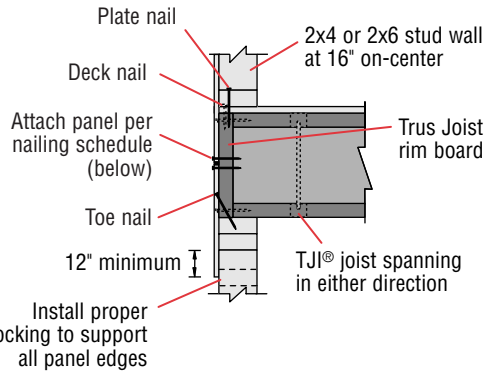
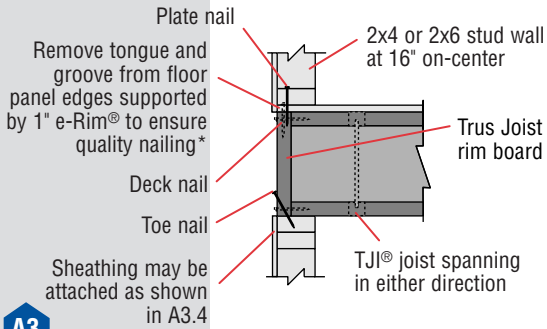
- Recommended nailing is 12" on-center in field and 6" on-center along sheathing edge. Nailing requirements on engineered drawings supersede recommendations.
- Nailing rows must be offset at least ½" and staggered.
- 14 ga. staples may be substituted for 8d (2½") nails if minimum penetration of 1" into the TJI® joist or rim board is achieved.

### Farthest On-Center Spacing Per Row

Maximum spacing of nails is:

- 18" on-center for 1¾" joist widths.
- 24" on-center for joist widths greater than 1¾".

# 4 Rim Board Details and Installation



**A3**

\*According to ICBO Evaluation Services, Inc., it is necessary to trim the panel edges when using 1 1/8" or thinner rim board.

**A3.1**

**A3.2**

**A3.3**

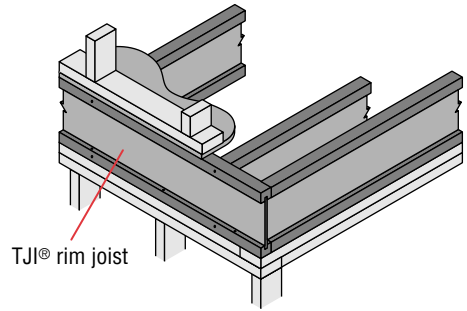
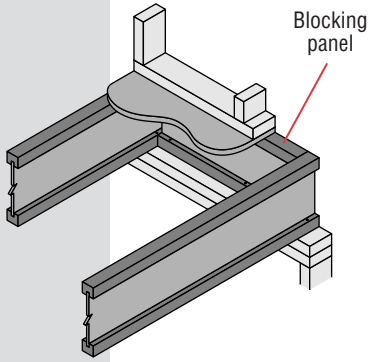
**A3.4**

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



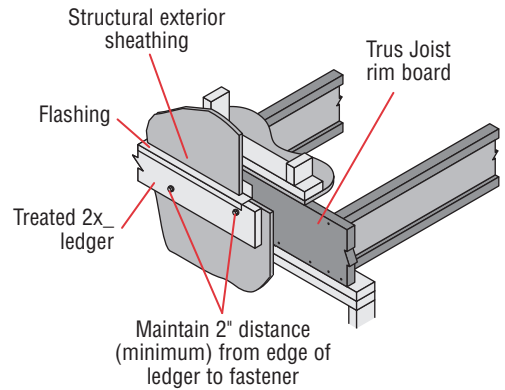
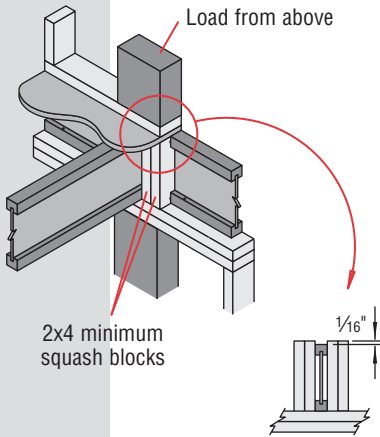
# Floor Details



A1

A2

*Must have 1 $\frac{3}{4}$ " minimum joist bearing at ends*



## Exterior Deck Attachment

CS

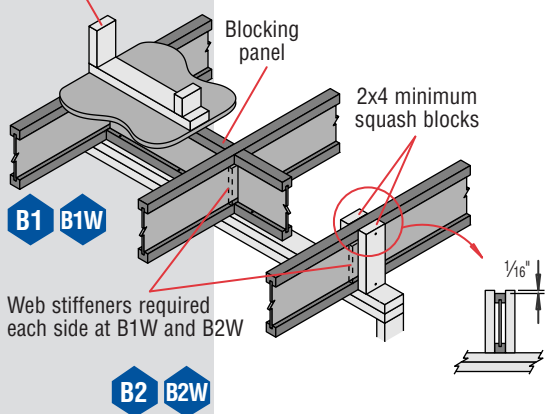
*Use 2x4 minimum squash blocks to transfer load around TJI® joist*

LA

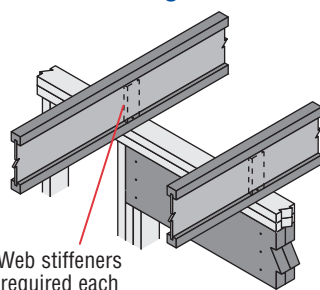
*Corrosion-resistant fasteners required for wet-service applications*

## 5 Floor Details

Load bearing or shear wall above (must stack over wall below)

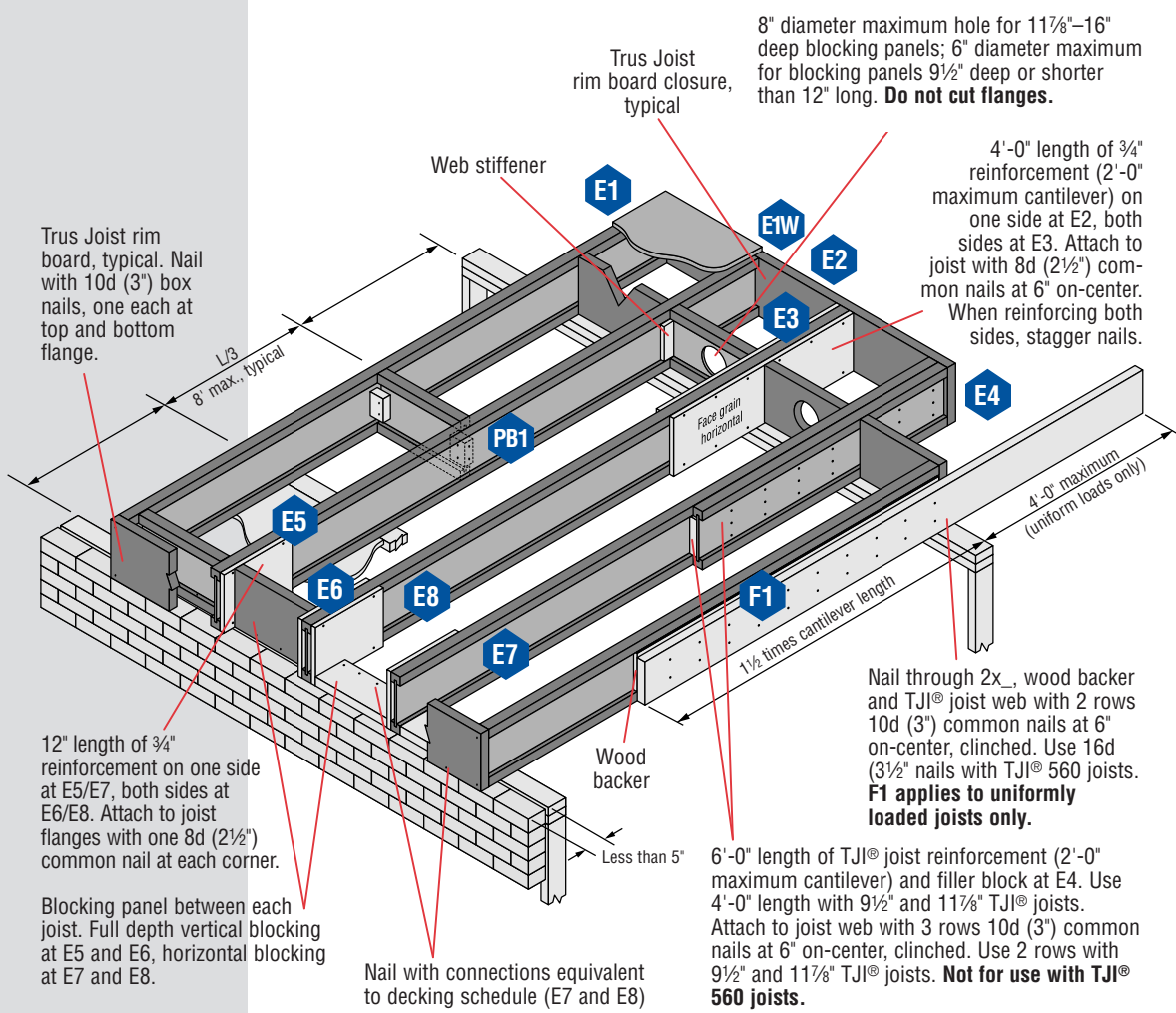


### Intermediate Bearing — No Load Bearing Wall Above



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

## Cantilever Details



8" diameter maximum hole for 11<sup>7</sup>/<sub>8</sub>"–16" deep blocking panels; 6" diameter maximum for blocking panels 9<sup>1</sup>/<sub>2</sub>" deep or shorter than 12" long. **Do not cut flanges.**

4'-0" length of 3/4" reinforcement (2'-0" maximum cantilever) on one side at E2, both sides at E3. Attach to joist with 8d (2<sup>1</sup>/<sub>2</sub>") common nails at 6" on-center. When reinforcing both sides, stagger nails.

Truss Joist rim board, typical. Nail with 10d (3") box nails, one each at top and bottom flange.

L/3  
8' max., typical

12" length of 3/4" reinforcement on one side at E5/E7, both sides at E6/E8. Attach to joist flanges with one 8d (2<sup>1</sup>/<sub>2</sub>") common nail at each corner.

Blocking panel between each joist. Full depth vertical blocking at E5 and E6, horizontal blocking at E7 and E8.

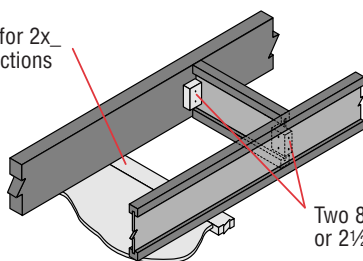
Nail with connections equivalent to decking schedule (E7 and E8)

Less than 5"

6'-0" length of TJI® joist reinforcement (2'-0" maximum cantilever) and filler block at E4. Use 4'-0" length with 9<sup>1</sup>/<sub>2</sub>" and 11<sup>7</sup>/<sub>8</sub>" TJI® joists. Attach to joist web with 3 rows 10d (3") common nails at 6" on-center, clinched. Use 2 rows with 9<sup>1</sup>/<sub>2</sub>" and 11<sup>7</sup>/<sub>8</sub>" TJI® joists. **Not for use with TJI® 560 joists.**

Nail through 2x<sub>4</sub>, wood backer and TJI® joist web with 2 rows 10d (3") common nails at 6" on-center, clinched. Use 16d (3<sup>1</sup>/<sub>2</sub>") nails with TJI® 560 joists. **F1 applies to uniformly loaded joists only.**

Two 2<sup>1</sup>/<sub>2</sub>" screws for 2x<sub>4</sub> strapping connections

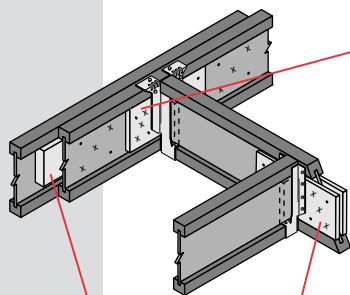


Apply subfloor adhesive to all contact surfaces

Two 8d (2<sup>1</sup>/<sub>2</sub>") box nails or 2<sup>1</sup>/<sub>2</sub>" screws, typical

**PB1** Required only when specified on the layout

## Filler and Backer Blocks



**H2**

Backer block both sides of web with single TJI® joist

### DOUBLE TJI® JOIST FILLER BLOCK

- **Single-Family Applications:** Attach with ten 10d (3") box nails, clinched. Use ten 16d (3<sup>1</sup>/<sub>2</sub>") box nails from each side with TJI® 560 joists.
- **Multi-Family Applications:** Attach with fifteen 10d (3") box nails, clinched. Use fifteen 16d (3<sup>1</sup>/<sub>2</sub>") box nails from each side with TJI® 560 joists.

### HANGER BACKER BLOCK

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

- **Single-Family Applications:** Attach with ten 10d (3") box nails, clinched when possible.
- **Multi-Family Applications:** Attach with fifteen 10d (3") box nails, clinched when possible.
- If necessary, increase filler and backer block height for face mount hangers and maintain 1/8" gap at top of joist; see detail W on page 6.
- Filler and backer block dimensions should accommodate required nailing without splitting.

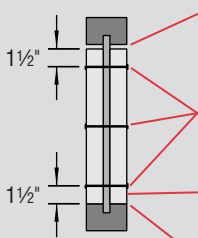
### HANGER BACKER BLOCK SIZES

- **TJI® 110 joists:** 3/8", minimum length 12"
- **TJI® 210 joists:** 3/4", minimum length 12"
- **TJI® 230 and 360 joists:** 1" net, minimum length 12"
- **TJI® 560 joists:** 2x<sub>4</sub>, minimum length 12"

### DOUBLE TJI® JOIST FILLER SIZES

- **TJI® 110 joists:** 2x<sub>4</sub>, minimum length 24"
- **TJI® 210 joists:** 2x<sub>4</sub> + 3/8" sheathing, minimum length 24"
- **TJI® 230 and 360 joists:** 2x<sub>4</sub> + 1/2" sheathing, minimum length 24"
- **TJI® 560 joists:** Two 2x<sub>4</sub>, minimum length 24"

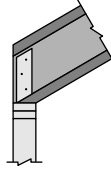
# 6 Web Stiffeners – Floor and Roof Applications



**Gap:**  
 1/8" minimum  
 2 3/4" maximum  
 Three 8d (2 1/2") box nails, clinched  
 (Three 16d (3 1/2") box nails at TJI® 560)

**Web stiffener each side.**  
 See sizes below.

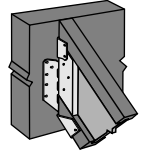
Tight fit



## WEB STIFFENER REQUIREMENTS

*Required at all birdsmouth cuts.*

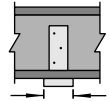
*Required at all sloped hangers. For TJI® 560 joists, web stiffeners are required at all hanger locations.*



*Required if the sides of the hanger do not extend to laterally support at least 3/8" of the TJI® joist top flange.*



*Web stiffeners are required when intermediate bearing lengths are less than 5 1/4" except where noted on framing plan.*



### WEB STIFFENER SIZES

- TJI® 110 joists: 5/8" x 2 5/16" minimum
- TJI® 210 joists: 3/4" x 2 5/16" minimum
- TJI® 230 and 360 joists: 7/8" x 2 5/16" minimum
- TJI® 560 joists: 2x4

## Typical Roof and Wall Framing

### DETAIL SCHEDULE

#### Bearings (see page 7)

- R1** on bevel plate
- R3** with variable slope seat connector
- R5** with birdsmouth cut
- R7** intermediate bearing
- R14** ridge detail

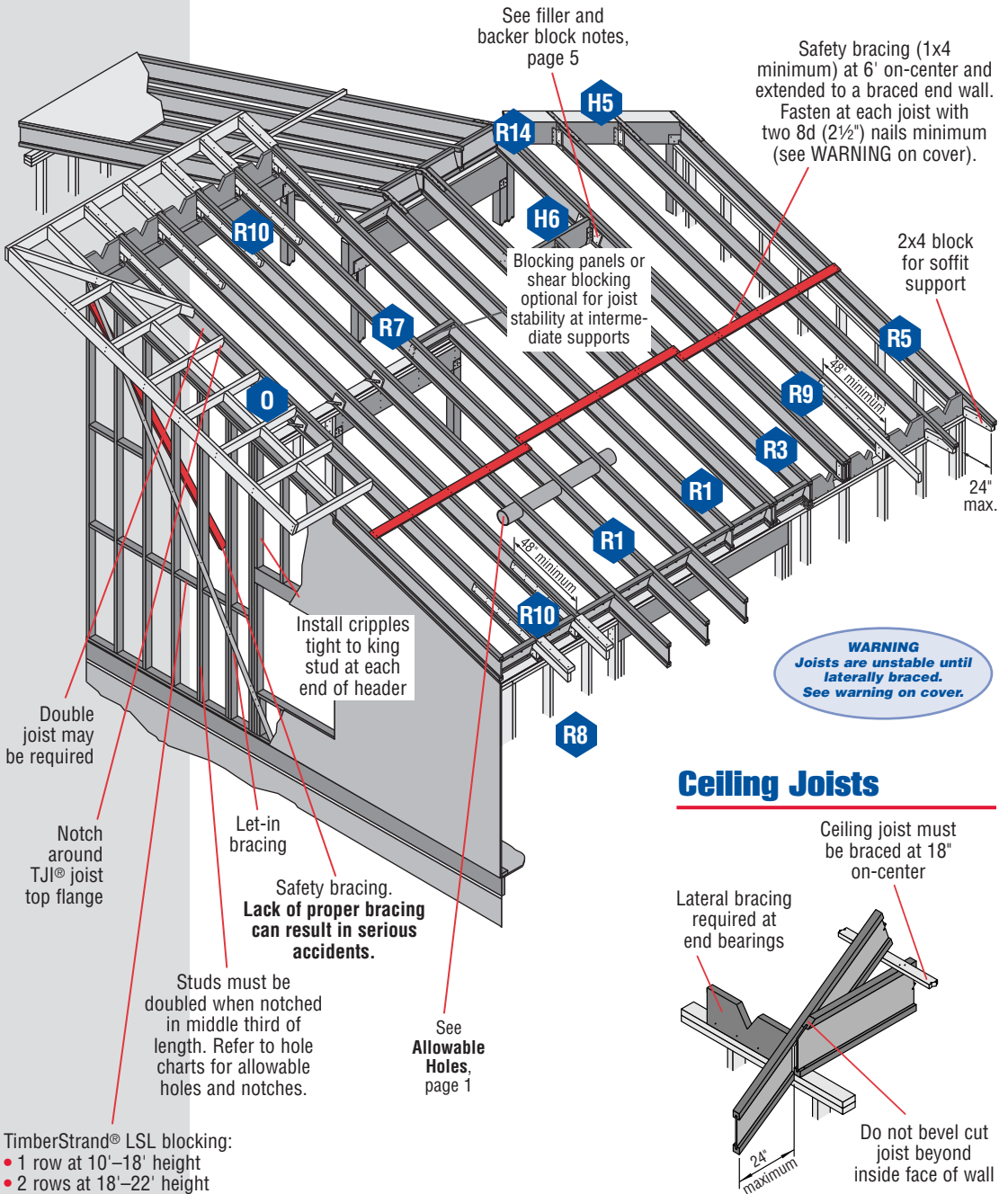
#### Outrigger details (see page 7)

- R8** 2x4 outrigger and filler with birdsmouth cut
- R9** 2x4 outrigger without filler
- R10** 2x4 outrigger and filler

#### Other details

- O** 2x\_ overhang at end wall
  - SB** shear blocking (see page 8)
  - W** web stiffeners
- Hanger details (see page 8)**
- H5** slope adjusted hanger
  - H6** header on slope

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



See filler and backer block notes, page 5

Safety bracing (1x4 minimum) at 6' on-center and extended to a braced end wall. Fasten at each joist with two 8d (2½") nails minimum (see WARNING on cover).

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

2x4 block for soffit support

24" max.

**WARNING**  
Joists are unstable until laterally braced. See warning on cover.

Install cripples tight to king stud at each end of header

Double joist may be required

Notch around TJI® joist top flange

Let-in bracing

Safety bracing. Lack of proper bracing can result in serious accidents.

Studs must be doubled when notched in middle third of length. Refer to hole charts for allowable holes and notches.

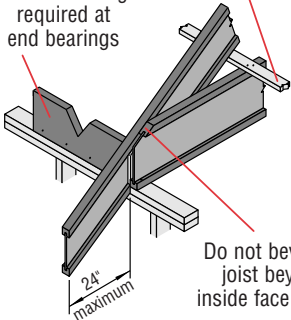
See Allowable Holes, page 1

TimberStrand® LSL blocking:  
• 1 row at 10'–18' height  
• 2 rows at 18'–22' height

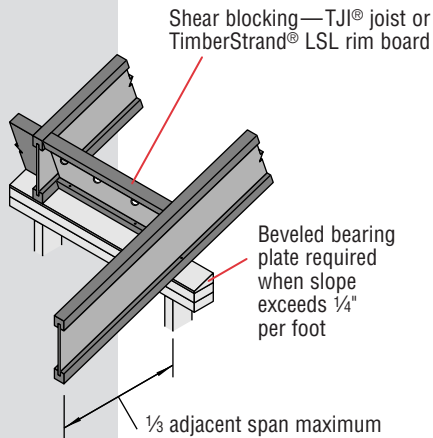
## Ceiling Joists

Ceiling joist must be braced at 18" on-center

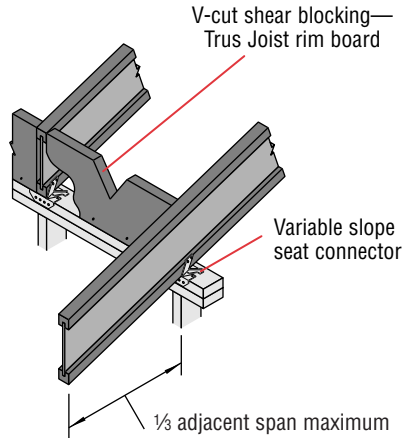
Lateral bracing required at end bearings



Do not bevel cut joist beyond inside face of wall



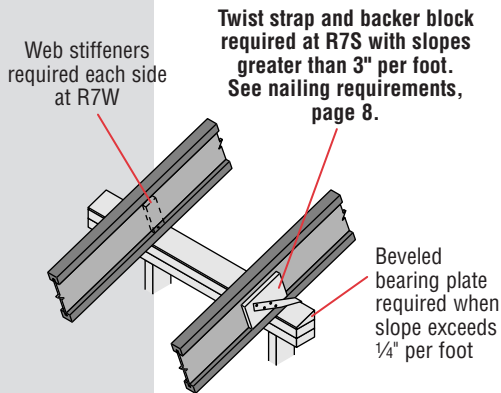
R1



R3

## Intermediate Bearing

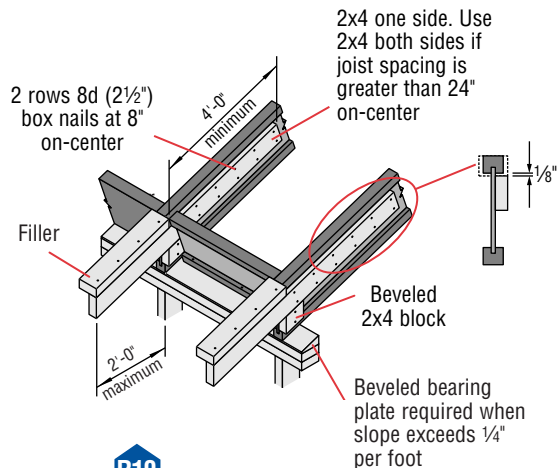
*Blocking panels or shear blocking may be specified for joist stability at intermediate supports*



R7

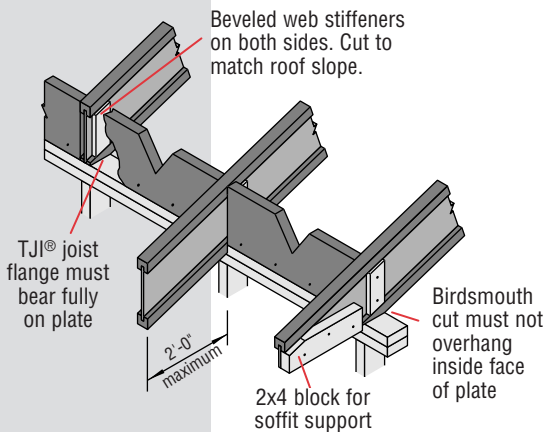
R7W

R7S

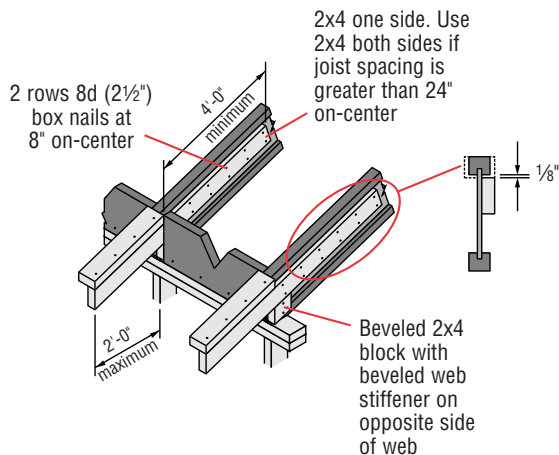


R10

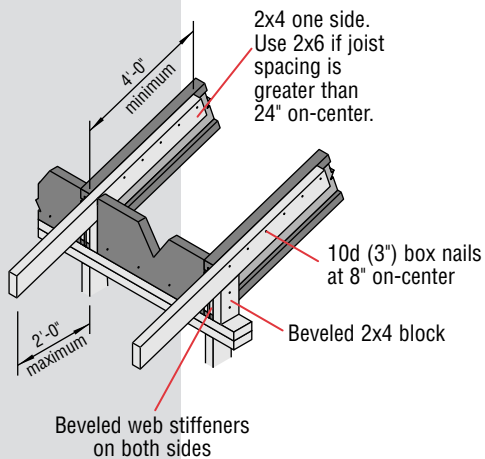
# Birdsmouth Cut – R5, R8, and R9 *Allowed at low end of joist only*



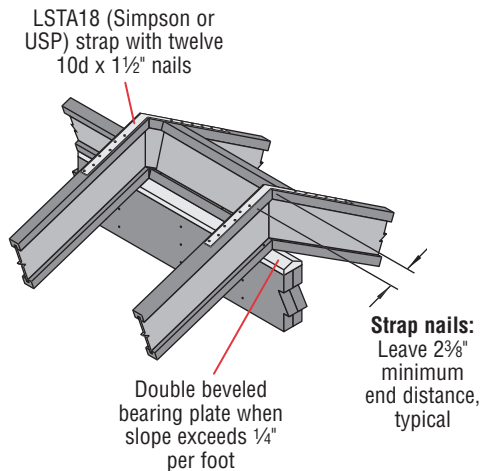
**R5**



**R8**



**R9**



**R14**

## APPROVED HANGERS

- The following three manufacturers are approved to supply hangers for Trus Joist products:
  - Simpson Strong-Tie™ 1-800-999-5099
  - USP Structural Connectors™ 1-800-328-5934 (MN) or 1-800-227-0470 (CA)
  - Simpson Strong-Tie™, Canada 1-877-642-2121
- Hanger design loads differ by support type and may exceed the capacity of the support and/or supported member. Contact your Trus Joist representative or refer to Trus Joist software.

## NAILING REQUIREMENTS

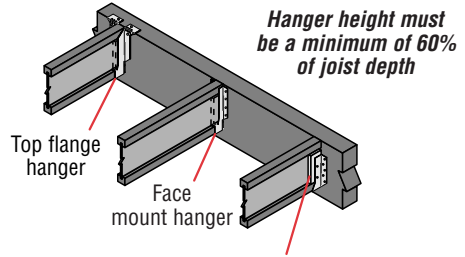
- Fill all round holes with the proper nails. Hanger nails are usually a heavier gauge because of the higher loads they need to carry.
- Unless specified otherwise, full capacity of straps or connectors can only be achieved if the following nail penetration is provided:

	FACE MOUNT	TOP FLANGE
10d x 1½"	1½" min	1½" min
10d (3") common	1¾" min	3" min
16d (3½") common	2" min	3½" min

- Top flange hangers should be fastened to TJI® joist headers with 10d x 1½" nails. Fasten face mount hangers to 3½" or wider TJI® joist headers with 10d (3") common or 16d (3½") common nails.

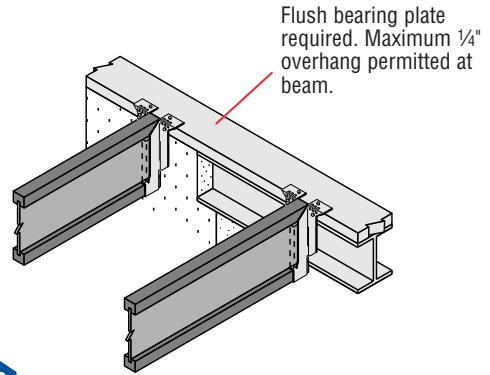
## CONNECTOR INSTALLATION & SQUEAK PREVENTION TIPS

- Nails must be completely set.
- Leave ⅛" clearance between the member and the support member or hanger.
- Joist to beam connections require hangers; do not toenail.
- Seat the supported member tight to the bottom of the hanger. On Simpson Strong-Tie™ ITT, IUT and VPA connectors, bend the bottom flange tabs over and nail to TJI® joist bottom flange.
- Reduce squeaks by adding subfloor adhesive to the hanger seat.



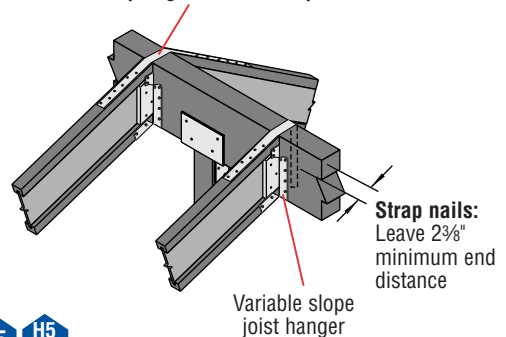
Web stiffeners required if the sides of the hanger do not laterally support at least ⅜" of the TJI® joist top flange

H1



H3

LSTA24 (Simpson or USP) strap with twelve 10d x 1½" nails required at H5S with slopes greater than 3" per foot

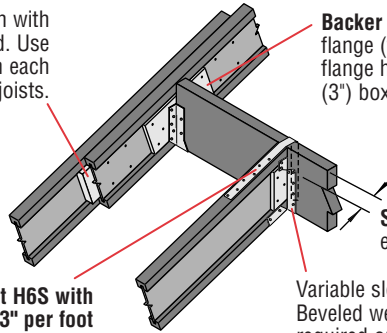


H5 H5S



**Filler block:** Attach with ten 10d (3") box nails, clinched. Use ten 16d (3½") box nails from each side with TJI® 560 joists.

**Backer block:** Install tight to bottom flange (tight to top flange with top flange hangers). Attach with ten 10d (3") box nails, clinched when possible.



**Strap nails:** Leave 2⅝" minimum end distance, typical

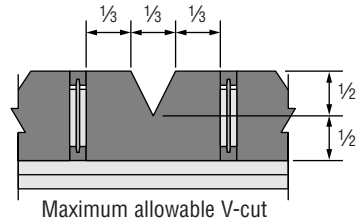
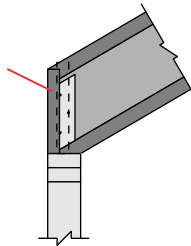
Variable slope joist hanger. Beveled web stiffeners required on each side.



LSTA18 strap required at H6S with slopes greater than 3" per foot

## Shear Blocking and Ventilation Holes Roof Only

Truss Joist rim board for shear blocking (between joists). Field trim to match joist depth at outer edge of wall or locate on wall to match joist depth.

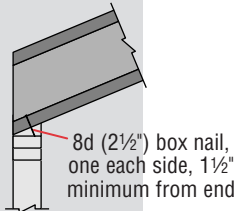


## TJI® Joist Nailing Requirements at Bearing

### TJI® Joist to Bearing Plate

#### END BEARING

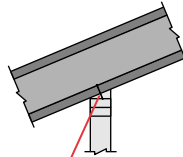
(1¼" minimum bearing required)



8d (2½") box nail, one each side, 1½" minimum from end

#### INTERMEDIATE BEARING

(3½" minimum bearing required)



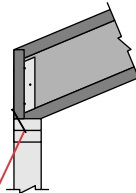
#### Slopes 3/12 or less:

One 8d (2½") box nail each side (see Detail R7)

#### Slopes greater than 3/12:

Two 8d (2½") box nails each side, plus a twist strap and backer block (see Detail R7S).

### Blocking to Bearing Plate



#### Truss Joist rim board:

Toenail with 10d (3") box nails at 6" on-center or 16d (3½") box nails at 12" on-center

#### TJI® joist blocking:

10d (3") box nails at 6" on-center

#### Shear transfer nailing:

Use connections equivalent to sheathing nail schedule

*When slope exceeds ¼" per foot, a beveled bearing plate, variable slope seat connector, or birdsmouth cut (at low end of joist only) is required*



## DETAIL SCHEDULE

### Beam and header details

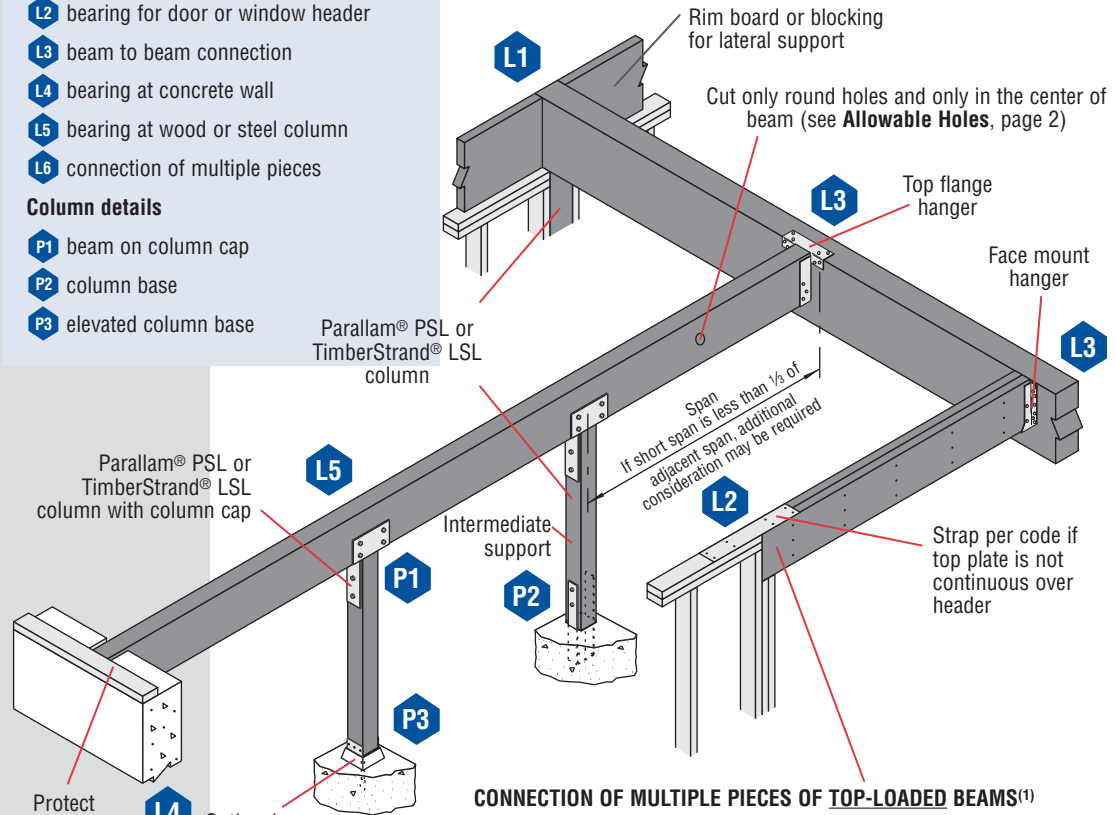
- L1** bearing at wood wall
- L2** bearing for door or window header
- L3** beam to beam connection
- L4** bearing at concrete wall
- L5** bearing at wood or steel column
- L6** connection of multiple pieces

### Column details

- P1** beam on column cap
- P2** column base
- P3** elevated column base

This guide is intended for the products shown, in dry-use, untreated conditions

*Bearing length is extremely critical and must be considered for each application. See table below for minimum end and intermediate bearing lengths, and your Trus Joist TJ-Xpert® framing plan, if applicable.*



### CONNECTION OF MULTIPLE PIECES OF TOP-LOADED BEAMS(1)

#### 1¾" Width Pieces

- Minimum of 3 rows 10d (3" x 0.128") nails at 12" on-center
- Minimum of 4 rows 10d (3" x 0.128") nails at 12" on-center for 14" and deeper beams
- If using 12d-16d nails, the number of nailing rows may be reduced by one.

#### 3½" Width Pieces

- Minimum of 2 rows ½" bolts at 24" on-center staggered
- (1) Load must be applied evenly across entire beam width. Otherwise, use connections for side-loaded beams.

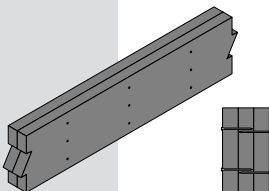
### CONNECTION OF MULTIPLE PIECES OF SIDE-LOADED BEAMS

- Additional nailing or bolting may be required with side-loaded multiple-member beams. Refer to current product literature.

Protect untreated wood from direct contact with concrete

Optional non-shrink grout

**L6**

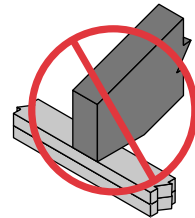


# Beam and Header Bearings

## Minimum Bearing Length for Beams and Headers

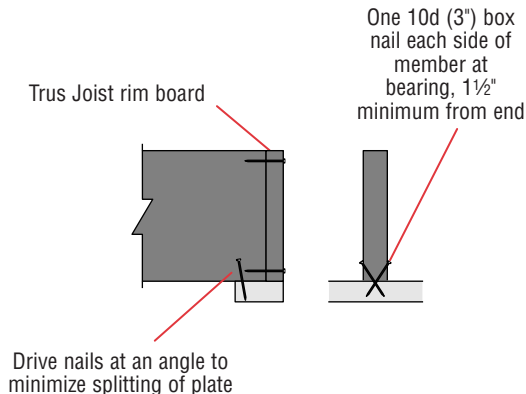
Beam Depth	Bearing	Span of Header or Beam								
		4'	6'	8'	10'	12'	16'	20'	24'	28'
5½"	End / Int.	2¼" / 4½"	1½" / 3½"	1½" / 3½"	1½" / 3½"	1½" / 3½"				
7¼"	End / Int.	3½" / 6¼"	2¼" / 5½"	1¾" / 4¼"	1½" / 3½"	1½" / 3½"	1½" / 3½"			
8⅝"	End / Int.	3½" / 8½"	2¼" / 5¾"	1¾" / 4¼"	1½" / 3½"	1½" / 3½"	1½" / 3½"	1½" / 3½"	1½" / 3½"	
9¼", 9½"	End / Int.		4¼" / 8"	3¼" / 7½"	2½" / 6¼"	2" / 5¼"	1½" / 4"	1½" / 3½"	1½" / 3½"	1½" / 3½"
11¼", 11⅝"	End / Int.				4" / 9¼"	3¼" / 8"	2¼" / 6"	1¾" / 4¾"	1½" / 4"	1½" / 3½"
14"	End / Int.					4½" / 10¾"	3¼" / 8¼"	2½" / 6½"	2" / 5½"	1¾" / 4¾"
16"	End / Int.						4¼" / 10½"	3¼" / 8½"	2¾" / 7"	2¼" / 6"
18"	End / Int.							4¼" / 10½"	3¼" / 8¾"	2¾" / 7½"
20"	End / Int.								4¼" / 10¾"	3½" / 9¼"

- Bearing across the full width of the beam is required.
- 1½" minimum bearing length at ends, 3½" at intermediate supports.
- Bearing lengths are based on bearing stress for TimberStrand® LSL, Parallam® PSL, or Microllam® LVL. Lengths may need to be increased if support member's allowable bearing stress is less (e.g., flat wood plate).
- Table assumes maximum allowable uniform load. For other conditions contact your Trus Joist technical representative.
- Beams and headers require lateral support at bearing points and along the top (or compression edge) at 24" on-center or closer.
- **1¾" x 16" and deeper beams and headers are to be used in multiple-member units only.**



*Seat cuts must be within wall.*

### BEAM ATTACHMENT AT BEARING



# Your Guarantee and Warranty



## HOMEBUYER'S GUARANTEE

We guarantee that the Trus Joist products used in your home have been manufactured to precise tolerances and are free from defects in materials and workmanship. In the unlikely event that your Silent Floor® joist develops squeaks or any other problem caused by such defects, and provided that your floor joists have been properly installed, we will promptly remedy that problem at no cost to you.

In addition, if you call us with a problem that you believe may be caused by our products, our representative will contact you within one business day to evaluate the problem and help solve it.

Guaranteed.

This guarantee is effective for the life of your home.

**1-800-628-3997**

*The TJ-Xpert® program is Design Software developed by Trus Joist.  
The TJ-Xpert® Warranty is applicable when this guide is accompanied by a complete TJ-Xpert® framing plan.*

## TJ-Xpert® WARRANTY

The Trus Joist (TJ) products called out on the TJ-Xpert® framing plan have been sized for the loads and dimensions entered by the computer operator into the TJ-Xpert® computer program.

The TJ-Xpert® program sized the TJ products in the framing plan in accordance with TJ design criteria.

Purchaser acknowledges receipt of the Builder's Guide and warrants that the TJ products will be installed in accordance with the Guide and the framing plan. All loads and dimensions used by the TJ-Xpert® program to design the framing plan have been specified by the Purchaser and verified by the Purchaser for completeness, accuracy and compliance with applicable code requirements.

The loads, dimensions and resulting framing plan have not been checked by a TJ engineer.

For conditions not shown in this guide or other assistance, contact your Trus Joist representative or call

**1-800-628-3997**

### CODE EVALUATIONS

#### TJ® Joists

- FHA/HUD 689 Rev. 8
- CCMC 13132-R
- ICC ESR-1153

#### TimberStrand® LSL

- FHA/HUD 1265b
- CCMC 12627-R
- ICC-ES Legacy Report ER-4979

#### Parallam® PSL

- FHA/HUD MR 1303a
- CCMC 11161-R
- ICC-ES Legacy Report ER-4979

#### Microllam® LVL

- FHA/HUD 925i
- CCMC 08675-R
- ICC-ES Legacy Report ER-4979

#### e-Rim®

- FHA/HUD 1265b
- ICC-ES Legacy Report ER-4979

#### TJ-Strand®

- FHA/HUD 1265b
- ICC-ES Legacy Report ER-4979



[www.trusjoist.com](http://www.trusjoist.com)

FOR MORE INFORMATION, CONTACT YOUR DEALER

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