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.
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- Fastening of Floor Panels .................................................. 3
- Rim Board Details and Installation ....................................... 4
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- Web Stiffeners .................................................................. 6
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**Product Identification**

**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) in the U.S. or provincial regulations (www.canoshweb.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 unsheathed floors and roofs.

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

**TJI® 110 joists**

**TJI® 210 joists**

**TJI® 230 joists**

**TJI® 360 joists**

**TJI® 560 joists**

**Do not cut holes larger than 1⅜” in cantilever**

**1⅝” hole may be cut anywhere in web outside hatched zone**

**Do NOT cut holes in cantilever reinforcement.**

**Do NOT cut or notch flange.**
### Table A—End Support
Minimum distance from edge of hole to inside face of nearest end support

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>TJI®</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>6½”</th>
<th>8¾”</th>
<th>11”</th>
<th>13”</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>6½”</th>
<th>8¾”</th>
<th>11”</th>
<th>13”</th>
</tr>
</thead>
<tbody>
<tr>
<td>9½”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>2’-0”</td>
<td>5’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>4’-6”</td>
<td>6-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>4’-6”</td>
<td>6-0”</td>
</tr>
<tr>
<td>11¼”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>2’-6”</td>
<td>5’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-6”</td>
<td>6-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>5’-0”</td>
</tr>
<tr>
<td>14”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>5’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-6”</td>
<td>6-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>5’-0”</td>
</tr>
<tr>
<td>16”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>5’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-6”</td>
<td>6-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>5’-0”</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>TJI®</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>6½”</th>
<th>8¾”</th>
<th>11”</th>
<th>13”</th>
<th>2”</th>
<th>3”</th>
<th>4”</th>
<th>6½”</th>
<th>8¾”</th>
<th>11”</th>
<th>13”</th>
</tr>
</thead>
<tbody>
<tr>
<td>9½”</td>
<td>110</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>3’-0”</td>
<td>7’-6”</td>
<td>1’-6”</td>
<td>2’-6”</td>
<td>3’-6”</td>
<td>6-6”</td>
<td>2’-6”</td>
<td>3’-6”</td>
<td>6-6”</td>
<td>2’-6”</td>
<td>3’-6”</td>
<td>6-6”</td>
</tr>
<tr>
<td>11¼”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>4’-0”</td>
<td>8’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-0”</td>
<td>8’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-0”</td>
</tr>
<tr>
<td>14”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>4’-0”</td>
<td>8’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-0”</td>
<td>8’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
</tr>
<tr>
<td>16”</td>
<td>110</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>4’-0”</td>
<td>8’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
<td>4’-0”</td>
<td>8’-0”</td>
<td>1’-0”</td>
<td>1’-6”</td>
<td>1’-6”</td>
</tr>
</tbody>
</table>

- Leave ½” 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.
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.

For Whitlam and Microllam:

- Maximum notch: 7⁄8” for 2x4, 13⁄8” for 2x6 and 2x8

Round Hole Chart

<table>
<thead>
<tr>
<th>Beam Depth</th>
<th>Maximum Round Hole Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>4⅛”</td>
<td>1”</td>
</tr>
<tr>
<td>5⅛”</td>
<td>1⅜”</td>
</tr>
<tr>
<td>7⅛” to 20”</td>
<td>2”</td>
</tr>
</tbody>
</table>

Maximum diameter: 13⁄8” for 2x4, 2¾” for 2x6 and 2x8

TJI® Joist Nailing Requirements at Bearing

The notch shown may be cut anywhere except the middle 1⁄2 of the length of the stud

Maximum diameter: 13⁄8” for 2x4, 2¾” for 2x6 and 2x8

5⁄8” minimum edge distance

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

**Rim to TJ® Joist**

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

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

**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

- 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.

**FrameWorks® FLOOR SYSTEM COMPONENTS**

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

**Connections to Bearing Plate**

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

**Squash Blocks to TJ® Joist**

- (Load bearing wall above)
- One 10d (3") box nail into each flange

**FrameWorks® Floor System**

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

- TJI® 560 floor joist

- TJI® 560 rim joist

- **Top View**

- **Also see detail B2, 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).

See filler and backer block notes, page 5

Blocking panel

Rim board joint between joists

Trus Joist rim board

Use only engineered lumber for rim board or blocking.

End of joists at centerline of support

Protect untreated wood from direct contact with concrete

Bearing plate to be flush with inside face of wall or beam

See fill and backer block notes, page 5

See filler notes, page 5

See Exterior Deck Attachment, page 4

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.

WARNING
Joists are unstable until laterally braced. See warning on cover.
**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
- E5 deck cantilever
- E6 permanent cantilever bracing

**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)

---

**Fastening of Floor Panels**

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

<table>
<thead>
<tr>
<th>Nail Size</th>
<th>TJI® 110 and 210</th>
<th>Trus Joist rim board</th>
<th>TimberStrand® LSL 1½” or wider</th>
<th>Microllam® LVL</th>
<th>Parallam® PSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>8d (2½”) common</td>
<td>3½”</td>
<td>2”</td>
<td>6”</td>
<td>4”</td>
<td>3”</td>
</tr>
<tr>
<td>10d (3”) common</td>
<td>4½”</td>
<td>3”</td>
<td>6”</td>
<td>4”</td>
<td>4”</td>
</tr>
<tr>
<td>16d (3½”) common</td>
<td>N.A.</td>
<td>4”</td>
<td>16”</td>
<td>6”(1)</td>
<td>8”</td>
</tr>
</tbody>
</table>

(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”.

---

**TJ-Xpert® Framing Plans**

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).

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

- **Plate nail**
- **Deck nail**
- **Toe nail**

Attaching panel per nailing schedule (below)

- 2x4 or 2x6 stud wall at 16" on-center

---

### Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>A3</th>
<th>A3.1(^{(1)})</th>
<th>A3.2(^{(1)})</th>
<th>A3.3(^{(1)})</th>
<th>A3.4(^{(1)})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rim Board Thickness</td>
<td>1&quot; or 1¼&quot;</td>
<td>1&quot;</td>
<td>1¼&quot;</td>
<td>1¼&quot;</td>
<td>1¼&quot;</td>
</tr>
<tr>
<td>Plate Nail—16d (3½&quot;) box</td>
<td>16&quot; o.c.</td>
<td>16&quot; o.c.</td>
<td>12&quot; o.c.</td>
<td>8&quot; o.c.</td>
<td>12&quot; o.c.</td>
</tr>
<tr>
<td>Deck Nail—8d (2½&quot;) common</td>
<td>6&quot; o.c.</td>
<td>6&quot; o.c.</td>
<td>6&quot; o.c.</td>
<td>6&quot; o.c.</td>
<td>6&quot; o.c.</td>
</tr>
<tr>
<td>Toe Nail—10d (3&quot;) box</td>
<td>6&quot; o.c.</td>
<td>6&quot; o.c.</td>
<td>6&quot; o.c.</td>
<td>4&quot; o.c.</td>
<td>6&quot; o.c.</td>
</tr>
<tr>
<td>Sill Plate Anchor Bolt</td>
<td>½&quot; dia. at 6' o.c.</td>
<td>½&quot; dia. at 6' o.c.</td>
<td>½&quot; dia. at 6' o.c.</td>
<td>½&quot; dia. at 6' o.c.</td>
<td>½&quot; dia. at 4' o.c.</td>
</tr>
</tbody>
</table>

### Wall Framing

#### Exterior Face

- **Sheathing**
  - Per code
- **Boundary Nailing**
  - Per code
- **Intermediate Nailing**
  - Per code
- **Max. Wall Opening Height**
  - 8d common at 6" o.c.
  - 8d common at 12" o.c.
  - 5'-4"\(^{(4)}\)
  - 70%
- **% of Wall with Full Height Sheathing**
  - 70%

#### Interior Face

- **Sheathing**
  - ½" gypsum
  - ½" gypsum
- **Boundary Nailing**
  - 5d cooler at 7" o.c.
  - 5d cooler at 7" o.c.
- **Intermediate Nailing**
  - 5d cooler at 10" o.c.
  - 5d cooler at 10" o.c.

#### Hold-Downs (if required)

- Per code
- 16" o.c. within 10' of corners\(^{(5)}\)
- 16" o.c. within 6' of corners\(^{(5)}\)
- 16" o.c. within 4' of corners\(^{(5)}\)
- N.A.

---

\(^{(1)}\) All sheathing shall be properly blocked and nailed.

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

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

\(^{(4)}\) One 6'-8" standard door opening is allowed.

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

**Blocking panel**

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

**2x4 minimum squash blocks**

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

**Exterior Deck Attachment**

- Structural exterior sheathing
- Flashing
- Treated 2x ledger
- Maintain 2" distance (minimum) from edge of ledger to fastener

**Corrosion-resistant fasteners required for wet-service applications**
**Intermediate Bearing — No Load Bearing Wall Above**

- Web stiffeners required each side at B3W
- Blocking panels may be required with shear walls above or below—see detail B1

**Floor Details**

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

**Cantilever Details**

- Two 2½" screws for 2x_ strapping connections
- Apply subfloor adhesive to all contact surfaces
- Two 8d (2½") box nails or 2½ screws, typical

Required only when specified on the layout

**Filler and Backer Blocks**

- 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: W, minimum length 12".
- TJI® 210 joists: W, minimum length 12".
- TJI® 330 and 360 joists: 1⁄8" net, minimum length 12".
- TJI® 560 joists: 2x_, minimum length 12".

**DOUBLE TJI® JOIST FILLER SIZES**

- TJI® 110 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 210 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 230 and 360 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 560 joists: 2x_ + 1⁄16" sheathing, minimum length 24".

---

**Intermediate Bearing — No Load Bearing Wall Above**

- Web stiffeners required each side at B3W
- Blocking panels may be required with shear walls above or below—see detail B1

**Floor Details**

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

**Cantilever Details**

- Two 2½" screws for 2x_ strapping connections
- Apply subfloor adhesive to all contact surfaces
- Two 8d (2½") box nails or 2½ screws, typical

Required only when specified on the layout

**Filler and Backer Blocks**

- 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: W, minimum length 12".
- TJI® 210 joists: W, minimum length 12".
- TJI® 330 and 360 joists: 1⁄8" net, minimum length 12".
- TJI® 560 joists: 2x_, minimum length 12".

**DOUBLE TJI® JOIST FILLER SIZES**

- TJI® 110 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 210 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 230 and 360 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 560 joists: 2x_ + 1⁄16" sheathing, minimum length 24".

---

**Floor Details**

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

**Cantilever Details**

- Two 2½" screws for 2x_ strapping connections
- Apply subfloor adhesive to all contact surfaces
- Two 8d (2½") box nails or 2½ screws, typical

Required only when specified on the layout

**Filler and Backer Blocks**

- 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: W, minimum length 12".
- TJI® 210 joists: W, minimum length 12".
- TJI® 330 and 360 joists: 1⁄8" net, minimum length 12".
- TJI® 560 joists: 2x_, minimum length 12".

**DOUBLE TJI® JOIST FILLER SIZES**

- TJI® 110 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 210 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 230 and 360 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
- TJI® 560 joists: 2x_ + 1⁄16" sheathing, minimum length 24".
Web Stiffeners – Floor and Roof Applications

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:** 9/16” 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**

<table>
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<th>Bearings (see page 7)</th>
<th>Other details</th>
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<td>R1 on bevel plate</td>
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<td>R5 with birdsmouth cut</td>
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<table>
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<th>Outrigger details (see page 7)</th>
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</tr>
<tr>
<td>R9 2x4 outrigger without filler</td>
</tr>
<tr>
<td>R10 2x4 outrigger and filler</td>
</tr>
</tbody>
</table>

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

2x4 block for soffit support

Ceiling joists must be braced at 18” on-center

Lateral bracing required at end bearings

Do not bevel cut joist beyond inside face of wall

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

Ceiling Joists

TimberStrand® LSL blocking:
- 1 row at 10’–18’ height
- 2 rows at 18’–22’ height

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

Allowable Holes, page 1

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

Install cripples tight to king stud at each end of header

Let-in bracing

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

Notch around TJ® joist top flange

Double joist may be required

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).
**Roof Details**

**Intermediate Bearing**

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

- **Twist strap and backer block required at R7S with slopes greater than 3” per foot.**
  - See nailing requirements, page 8.
- **Web stiffeners required each side at R7W**
- **2x4 one side. Use 2x4 both sides if joist spacing is greater than 24” on-center**
- **2 rows 8d (21/2”) box nails at 8” on-center**
- **4’-0” minimum**
- **2’-0” maximum**
- **1/3 adjacent span maximum**

- **Beveled bearing plate required when slope exceeds 1/4” per foot**
- **Filler**

- **Variable slope seat connector**
- **V-cut shear blocking—Trus Joist rim board**

- **Shear blocking—TJ® joist or TimberStrand® LSL rim board**

- **R1**
  - **R3**
  - **R7**
  - **R7 W**
  - **R7 S**
  - **R10**
Birdsmouth Cut — R5, R8, and R9

**R5**
- TJI® joist flange must bear fully on plate.
- Beveled web stiffeners on both sides. Cut to match roof slope.
- 2x4 block for soffit support.
- 2x4 one side. Use 2x6 if joist spacing is greater than 24" on-center.
- 2 rows 8d (2½") box nails at 8" on-center.
- Beveled 2x4 block with beveled web stiffener on opposite side of web.
- 2'-0" maximum.
- 4'-0" minimum.

**R8**
- Birdsmouth cut must not overhang inside face of plate.
- TJI® joist flange must bear fully on plate.
- Beveled 2x4 block with beveled web stiffener on opposite side of web.
- 2x4 block for soffit support.
- 2 rows 8d (2½") box nails at 8" on-center.
- Beveled 2x4 block.
- 2'-0" maximum.
- 4'-0" minimum.

**R9**
- 10d (3") box nails at 8" on-center.
- Beveled web stiffeners on both sides.
- Beveled 2x4 block.
- 2'-0" maximum.
- 4'-0" minimum.

**R14**
- LSTA18 (Simpson or USP) strap with twelve 10d x 1½" nails.
- Double beveled bearing plate when slope exceeds ¼" per foot.
- Strap nails: Leave 2¾" minimum end distance, typical.
**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:

<table>
<thead>
<tr>
<th>FACE MOUNT</th>
<th>TOP FLANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>10d x 1 1/2&quot;</td>
<td>1 1/2&quot; min</td>
</tr>
<tr>
<td>10d (3&quot;) common</td>
<td>1 3/4&quot; min</td>
</tr>
<tr>
<td>16d (3 1/2&quot;) common</td>
<td>2&quot; min</td>
</tr>
</tbody>
</table>
- Top flange hangers should be fastened to TJI® joist headers with 10d x 1 1/2" nails. Fasten face mount hangers to 3 1/2" or wider TJI® joist headers with 10d (3") common or 16d (3 1/2") common nails.

**CONNECTOR INSTALLATION & SQUEAK PREVENTION TIPS**

- Nails must be completely set.
- Leave 1/16" 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.
**Shear Blocking and Ventilation Holes**  
*Roof Only*

- **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 2½" minimum end distance, typical

---

**TJI® Joist Nailing Requirements at Bearing**

- **TJI® Joist to Bearing Plate**
  - **END BEARING**  
    - (1¾" 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**

- **Trus 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.
**Beam and Column Details**

**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

---

**Additional Notes**

- Rim board or blocking for lateral support
- Cut only round holes and only in the center of beam (see Allowable Holes, page 2)
- Top flange hanger
- Face mount hanger
- Strap per code if top plate is not continuous over header

---

**Connection of Multiple Pieces of Top-Loaded Beams**

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

---

**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.

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This guide is intended for the products shown, in dry-use, untreated conditions.
### Minimum Bearing Length for Beams and Headers

<table>
<thead>
<tr>
<th>Beam Depth</th>
<th>Bearing</th>
<th>Span of Header or Beam</th>
</tr>
</thead>
<tbody>
<tr>
<td>5½&quot;</td>
<td>End / Int.</td>
<td>4' 6' 8' 10' 12' 16' 20' 24' 28'</td>
</tr>
<tr>
<td>7½&quot;</td>
<td>End / Int.</td>
<td>2¼&quot; / 4½&quot; 1½&quot; / 3½&quot; 1½&quot; / 3½&quot; 1½&quot; / 3½&quot;</td>
</tr>
<tr>
<td>8½&quot;</td>
<td>End / Int.</td>
<td>3½&quot; / 6½&quot; 2½&quot; / 5½&quot; 1¾&quot; / 4¼&quot; 1½&quot; / 3½&quot;</td>
</tr>
<tr>
<td>9½&quot;, 9¾&quot;</td>
<td>End / Int.</td>
<td>4½&quot; / 8&quot; 3¼&quot; / 7½&quot; 2½&quot; / 6¼&quot; 2&quot; / 5¼&quot;</td>
</tr>
<tr>
<td>11¼&quot;, 11¾&quot;</td>
<td>End / Int.</td>
<td>4&quot; / 9½&quot; 3¼&quot; / 8&quot; 2½&quot; / 6&quot; 1¾&quot; / 4½&quot;</td>
</tr>
<tr>
<td>14&quot;</td>
<td>End / Int.</td>
<td>4½&quot; / 10½&quot; 3½&quot; / 8½&quot; 2½&quot; / 6½&quot; 2½&quot; / 5½&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>End / Int.</td>
<td>4½&quot; / 10½&quot; 3½&quot; / 8½&quot; 2½&quot; / 7&quot; 2½&quot; / 6&quot;</td>
</tr>
<tr>
<td>18&quot;</td>
<td>End / Int.</td>
<td>4½&quot; / 10½&quot; 3½&quot; / 8½&quot; 2½&quot; / 7½&quot;</td>
</tr>
<tr>
<td>20&quot;</td>
<td>End / Int.</td>
<td>4½&quot; / 10½&quot; 3½&quot; / 9½&quot;</td>
</tr>
</tbody>
</table>

- 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.

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**Seat cuts must be within wall.**

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**BEAM ATTACHMENT AT BEARING**

- Drive nails at an angle to minimize splitting of plate
- One 10d (3") box nail each side of member at bearing, 1½" minimum from end

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**Trus Joist rim board**
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.

This guarantee is effective for the life of your home.

1-800-628-3997

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

TJI® 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

For more information, contact your dealer

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