TJI® 110 • TJI® 210
TJI® 230 • TJI® 360
TJI® 560 JOISTS

Featuring Trus Joist® TJI® Joists for Floor and Roof Applications

• Uniform and Predictable
• Lightweight for Fast Installation
• Resource Efficient
• Resists Bowing, Twisting, and Shrinking
• Significantly Reduces Callbacks
• Available in Long Lengths
• Limited Product Warranty
Why Choose Trus Joist® TJ® Joists?
• Engineered for strength and consistency
• Efficient installation saves time and labor
• Longer lengths allow more versatile floor plans
• Less jobsite waste
• Fewer red tags and callbacks

This guide features TJ® Joists in the following sizes:
Flange Widths: 1¾"", 2½", 2¾", and 3½"
Depths: 9½", 11¾", 14", and 16"

Some TJ® joist series may not be available in your region.

For deeper depth TJ® joists, see the Weyerhaeuser Deep Depth TJ® Joist guide, #TJ-4005, or contact your Weyerhaeuser representative.

TJ-PRO™ RATINGS TAKE THE GUESSWORK OUT OF FLOOR PERFORMANCE

Trus Joist® TJ-Pro™ Ratings are generated by a sophisticated computer model designed to predict floor performance and evaluate the relationship between the cost and the “feel” of any given floor system. The methodology is based on extensive laboratory research, more than one million installations, and the combined expertise of some of the best engineers in the field. TJ-Pro™ Ratings go beyond deflection criteria to consider job-specific needs and expectations. In many cases, using TJ-Pro™ Ratings will offer a system that improves performance while actually reducing costs!

TJ-PRO™ RATING ADVANTAGES
• Works as part of Forte® and Javelin® software
• Provides a method for predicting floor performance
• Takes perceptions of the homeowner into account
• Provides cost comparison
Design Properties

**TJI® 110 Joists**

- 1¾”
- 3⁄8”
- 9½”
- 117⁄8”
- 14”
- 1¼”–13⁄8”

**TJI® 210 Joists**

- 3⁄8”
- 21⁄16”
- 9½”
- 117⁄8”
- 14”
- 16”
- 1¼”–13⁄8”

**TJI® 230 Joists**

- 3⁄8”
- 25⁄16”
- 9½”
- 117⁄8”
- 14”
- 16”
- 1¼”–13⁄8”

**TJI® 360 Joists**

- 3⁄8”
- 25⁄16”
- 117⁄8”
- 14”
- 16”
- 13⁄8”

**TJI® 560 Joists**

- 7⁄16”
- 3½”
- 117⁄8”
- 14”
- 16”
- 13⁄8”

### General Notes

- Design reaction includes all loads on the joist. Design shear is computed at the inside face of supports and includes all loads on the span(s). Allowable shear may sometimes be increased at interior supports in accordance with ICC ES ESR-1153, and these increases are reflected in span tables.

- The following formulas approximate the uniform load deflection of $\Delta$ (inches):

  For TJI® 110, 210, 230, and 360 Joists:
  
  $$\Delta = \frac{22.5 \, w \, L^4}{E \, I} + \frac{2.67 \, w \, L^2}{d \times 10^6}$$

  For TJI® 560 Joists:
  
  $$\Delta = \frac{22.5 \, w \, L^4}{E \, I} + \frac{2.29 \, w \, L^2}{d \times 10^6}$$

  where:
  - $w = $uniform load in pounds per linear foot
  - $L = $span in feet
  - $d = $out-to-out depth of the joist in inches
  - $E = $value from table above

### Design Properties (100% Load Duration)

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJI® 110</th>
<th>TJI® 210</th>
<th>TJI® 230</th>
<th>TJI® 360</th>
<th>TJI® 560</th>
</tr>
</thead>
<tbody>
<tr>
<td>9½”</td>
<td>2.3</td>
<td>2.5</td>
<td>2.8</td>
<td>3.0</td>
<td>4.0</td>
</tr>
<tr>
<td>117⁄8”</td>
<td>2.5</td>
<td>2.8</td>
<td>3.0</td>
<td>3.3</td>
<td>4.2</td>
</tr>
<tr>
<td>14”</td>
<td>2.8</td>
<td>3.1</td>
<td>3.3</td>
<td>3.3</td>
<td>4.2</td>
</tr>
<tr>
<td>16”</td>
<td>2.1</td>
<td>3.3</td>
<td>3.5</td>
<td>3.5</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**PRODUCT STORAGE**

- Protect product from sun and water
- CAUTION: Wrap is slippery when wet or icy
- Use support blocks at 10’ on-center to keep bundles out of mud and water
- Align stickers directly over support blocks

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Trus Joist® TJI® Joist Specifier’s Guide | TJ-4000 | May 2013
## FLOOR SPAN TABLES AND MATERIAL WEIGHTS

### L/480 Live Load Deflection

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJI®</th>
<th>40 PSF Live Load / 10 PSF Dead Load</th>
<th>40 PSF Live Load / 20 PSF Dead Load</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12&quot; o.c.</td>
<td>16&quot; o.c.</td>
<td>19.2&quot; o.c.</td>
</tr>
<tr>
<td>11¾&quot;</td>
<td>100</td>
<td>9½&quot;</td>
<td>16&quot;</td>
</tr>
</tbody>
</table>

- **Note:** For multi-family applications and other loading conditions not shown, refer to our TJ-Pro™ Ratings.

### Material Weights

(Include TJI® weights in dead load calculations — see Design Properties table on page 3 for joist weights)

#### Floor Panels

- **Southern Pine**
  - ½" plywood .................... 1.7 psf
  - ¾" plywood .................... 2.0 psf
  - 1¾" plywood ................... 2.5 psf
  - 1½" OSB ........................ 1.8 psf
  - 1½" OSB ........................ 2.2 psf
  - ¾" OSB .......................... 2.7 psf
  - 1½" OSB ........................ 3.1 psf
  - 1¼" OSB ......................... 4.1 psf
  - Based on: Southern pine – 40 pcf for plywood, 44 pcf for OSB

#### Roofing

- Asphalt shingles .................. 2.5 psf
- Wood shingles .................... 2.0 psf
- Clay tile ........................ 9.0 to 14.0 psf
- Slate (¼" thick) .................. 15.0 psf

#### Roll or Batt Insulation (1" thick):

- Rock wool ......................... 0.2 psf
- Glass wool ....................... 0.1 psf

#### Floor Finishes

- Hardwood (nominal 1") ............ 4.0 psf
- Sheet vinyl ....................... 0.5 psf
- Carpet and pad ................... 1.0 psf
- ½" ceramic or quarry tile ........ 10.0 psf

#### Concrete:

- Regular (1") ..................... 12.0 psf
- Lightweight (1") ................ 8.0 to 10.0 psf
- Gypsum concrete (¾") ........... 6.5 psf

#### Ceilings

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

### How to Use These Tables

1. Determine the appropriate live load deflection criteria.
2. Identify the live and dead load condition.
3. Select on-center spacing.
4. Scan down the column until you meet or exceed the span of your application.
5. Select TJI® joist and depth.

**General Notes**

- Tables are based on:
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Clear distance between supports
  - Minimum bearing length of 1¾" end (no web stiffeners) and 3½" intermediate.

- Assumed composite action with a single layer of 24" on-center span-rated, glue-nailed floor panels for deflection only. Spans shall be reduced 6" when floor panels are nailed only.

- Spans generated from Weyerhaeuser software may exceed the spans shown in these tables because software reflects actual design conditions.

- For multi-family applications and other loading conditions not shown, refer to Weyerhaeuser software or to the load table on page 5.
## FLOOR LOAD TABLE

### Floor—100% (PLF)

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJI®</th>
<th>8'</th>
<th>10'</th>
<th>12'</th>
<th>14'</th>
<th>16'</th>
<th>18'</th>
<th>20'</th>
<th>22'</th>
<th>24'</th>
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</thead>
<tbody>
<tr>
<td>9½”</td>
<td>110</td>
<td>190</td>
<td>140</td>
<td>152</td>
<td>127</td>
<td>56</td>
<td>99</td>
<td>38</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>11½”</td>
<td>210</td>
<td>210</td>
<td>161</td>
<td>169</td>
<td>141</td>
<td>65</td>
<td>119</td>
<td>45</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>236</td>
<td>175</td>
<td>190</td>
<td>108</td>
<td>158</td>
<td>71</td>
<td>133</td>
<td>49</td>
<td>99</td>
<td></td>
</tr>
<tr>
<td>360</td>
<td>241</td>
<td>193</td>
<td>158</td>
<td>116</td>
<td>136</td>
<td>80</td>
<td>119</td>
<td>43</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>560</td>
<td>294</td>
<td>236</td>
<td>197</td>
<td>169</td>
<td>138</td>
<td>148</td>
<td>101</td>
<td>132</td>
<td>76</td>
<td>119</td>
</tr>
<tr>
<td>11”</td>
<td>110</td>
<td>210</td>
<td>169</td>
<td>141</td>
<td>121</td>
<td>106</td>
<td>96</td>
<td>57</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>236</td>
<td>190</td>
<td>158</td>
<td>136</td>
<td>115</td>
<td>119</td>
<td>83</td>
<td>106</td>
<td>62</td>
<td>95</td>
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<tr>
<td>360</td>
<td>241</td>
<td>193</td>
<td>162</td>
<td>139</td>
<td>121</td>
<td>98</td>
<td>108</td>
<td>73</td>
<td>97</td>
<td>56</td>
</tr>
<tr>
<td>560</td>
<td>294</td>
<td>236</td>
<td>197</td>
<td>169</td>
<td>148</td>
<td>132</td>
<td>107</td>
<td>119</td>
<td>83</td>
<td>108</td>
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<tr>
<td>14”</td>
<td>210</td>
<td>210</td>
<td>169</td>
<td>141</td>
<td>121</td>
<td>106</td>
<td>96</td>
<td>57</td>
<td>85</td>
<td>58</td>
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<td>230</td>
<td>236</td>
<td>190</td>
<td>158</td>
<td>136</td>
<td>115</td>
<td>119</td>
<td>83</td>
<td>106</td>
<td>62</td>
<td>95</td>
</tr>
<tr>
<td>360</td>
<td>241</td>
<td>193</td>
<td>162</td>
<td>139</td>
<td>121</td>
<td>98</td>
<td>108</td>
<td>73</td>
<td>97</td>
<td>56</td>
</tr>
<tr>
<td>560</td>
<td>294</td>
<td>236</td>
<td>197</td>
<td>169</td>
<td>148</td>
<td>132</td>
<td>107</td>
<td>119</td>
<td>83</td>
<td>108</td>
</tr>
</tbody>
</table>

* Indicates that Total Load value controls.

### How to Use This Table

1. Calculate actual total and live load in pounds per linear foot (plf).
2. Select appropriate Joist Clear Span.
3. Scan down the column to find a TJI® joist that meets or exceeds actual total and live loads.

### General Notes

- **Table is based on:**
  - Minimum bearing length of 1¾” end and 3½” intermediate, without web stiffeners
  - Uniform loads.
  - More restrictive of simple or continuous span
  - No composite action provided by sheathing.
- **Total Load** values are limited to deflection of L/240.
- **Live Load** is based on joist deflection of L/480.
- If a live load deflection limit of L/360 is desired, multiply value in Live Load column by 1.33. The resulting live load must not exceed the Total Load shown.
- Table does not account for concentrated loads. Use Weyerhaeuser software when this condition applies.

### PSF to PLF Conversions

<table>
<thead>
<tr>
<th>O.C. Spacing</th>
<th>Load in Pounds Per Square Foot (PSF)</th>
<th>Load in Pounds Per Linear Foot (PLF)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>12”</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>16”</td>
<td>27</td>
<td>34</td>
</tr>
<tr>
<td>19.2”</td>
<td>32</td>
<td>40</td>
</tr>
<tr>
<td>24”</td>
<td>40</td>
<td>50</td>
</tr>
</tbody>
</table>

### WARNING NOTES:

Lack of proper bracing during construction can result in serious accidents. Observe the following guidelines:

1. All blocking, hangers, rim boards, and rim joists at the end supports of the TJI® joists must be completely installed and properly nailed.
2. Lateral strength, like a braced end wall or an existing deck, must be established at the ends of the bay. This can also be accomplished by a temporary or permanent deck (sheathing) fastened to the first 4 feet of joists at the end of the bay.
3. Safety bracing of 1x4 (minimum) must be nailed to a braced end wall or sheathed area (as in note 2) and to each joist. Without this bracing, buckling sideways or rollover is highly probable under light construction loads—such as a worker or one layer of unnailed sheathing.
4. Sheathing must be completely attached 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. The flanges must remain straight within a tolerance of ½” from true alignment.

### Joists are unstable until braced laterally

Bracing Includes:
- Blocking
- Hangers
- Rim Board
- Sheathing
- Rim Joist
- Strut Lines

**WARNING:** Do NOT walk on joists until braced. INJURY MAY RESULT.

**WARNING:** Do NOT stack building materials on unsheathed joists. Stack only over beams or walls.

**WARNING:** Do NOT walk on joists that are lying flat.

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Trus Joist® TJI® Joist Specifier’s Guide   TJ-4000   May 2013
**TJI® Joist Nailing Requirements at Bearing**

- **TJI® Joist to Bearing Plate**
  - 1¼" TJ® rim board or 1¼" TimberStrand® LSL
  - 1¾" minimum bearing at end support
  - 3½" minimum intermediate bearing, 1½" may be required for maximum capacity
  - See detailed connections equivalent to floor panel nailing schedule

- **Squash Blocks to TJI® Joist (Load bearing wall above)**
  - One 10d (0.128" x 3") nail into each flange
  - Also see detail B2 on page 7

**Top View**

- TJ® 560 rim joist
  - Top view
  - 1¾” minimum bearing

- TJ® 560 floor joist
  - Locate rim board joint between joists

**Web Stiffener Attachment**

- Web stiffener both sides
  - See sizes below
  - Tight fit

**Web Stiffener Requirements**

<table>
<thead>
<tr>
<th>TJI®</th>
<th>Min. Web Stiffener Size</th>
<th>Nailing Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>5/8&quot; x 2 1/2&quot; (1)</td>
<td>8d (0.113&quot; x 2½&quot;)</td>
</tr>
<tr>
<td>210</td>
<td>¾&quot; x 2 1/2&quot; (1)</td>
<td>8d (0.113&quot; x 2½&quot;)</td>
</tr>
<tr>
<td>230, 360</td>
<td>¾&quot; x 2 1/2&quot; (1)</td>
<td>10d (0.128&quot; x 3&quot;)</td>
</tr>
<tr>
<td>560</td>
<td>2x4 (2)</td>
<td>16d (0.135&quot; x 3½&quot;)</td>
</tr>
</tbody>
</table>

(1) PS1 or PS2 sheathing, face grain vertical
(2) Construction grade or better

**WARNING**

Joists are unstable until laterally braced. See Warning Notes on page 5.
**FLOOR DETAILS**

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

**Blocking panel:**
- 1½" TJ® Rim Board, 1¼" TimberStrand® LSL, or TJ® joist.
- 1¼" 2x6, 2x8, 2x10 + 3⁄8", 2x12 + ¾" or 1" net

**Load bearing wall above** (must stack over wall below)

- 2x4 minimum squash blocks

**No load bearing wall above**

- Web stiffeners required on both sides at B1W ONLY. See footnote 1 under span tables.

- Blocking panels may be required with face mount hangers and maintain ⅜" of TJ® joist top flange

- Web stiffeners required on both sides of web with single TJ® joist

**Backer block:**
- Install tight to top flange (tight to bottom flange with face mount hangers). Attach with ten 10d (0.128" x 3") nails, clinched when possible. Use 15 nails in multi-family applications.

**Filler block:**
- Nail with ten 10d (0.128" x 3") nails, clinched. Use ten 16d (0.135" x 3½") nails from each side with TJ® joists.

**Face mount hanger**

**Top mount hanger**

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

**Filler and Backer Block Sizes**

<table>
<thead>
<tr>
<th>TJ®</th>
<th>110</th>
<th>210</th>
<th>230 or 360</th>
<th>560</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth</td>
<td>9½&quot; or 11½&quot;</td>
<td>14&quot;</td>
<td>9½&quot; or 11½&quot;</td>
<td>14&quot; or 16&quot;</td>
</tr>
<tr>
<td>Filler Block (Detail H2)</td>
<td>2x6</td>
<td>2x8</td>
<td>2x6 + ⅜&quot; sheathing</td>
<td>2x8 + ⅜&quot; sheathing</td>
</tr>
<tr>
<td>Cantilever Filler (Detail E4)</td>
<td>2x6</td>
<td>4'-0&quot; long</td>
<td>2x10</td>
<td>6'-0&quot; long</td>
</tr>
<tr>
<td>Backer Block (Detail F1 or H2)</td>
<td>⅞&quot; or ¾&quot;</td>
<td>¾&quot; or ⅞&quot;</td>
<td>⅞&quot; or ⅞&quot;</td>
<td>⅞&quot; or ⅞&quot;</td>
</tr>
</tbody>
</table>

(1) If necessary, increase filler and backer block height for face mount hangers and maintain ⅛" gap at top of joist. See detail W. Filler and backer block dimensions should accommodate required nailing without splitting. The suggested minimum length is 24" for filler and 12" for backer blocks.

(2) For non-diaphragm applications, multiple rows of fasteners are permitted if the rows are offset at least ½" and staggered.

**Fastener Spacing and Diaphragm Design Information**

<table>
<thead>
<tr>
<th>TJ®</th>
<th>Closest On-Center Spacing per Row(1)(2)</th>
<th>Equivalent Nominal Framing Width</th>
<th>Maximum Allowable Seismic Design Capacities(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8d (0.113&quot; x 2½&quot;), 8d (0.131&quot; x 2½&quot;), 10d (0.128&quot; x 3&quot;), 12d (0.148&quot; x 3¼&quot;), 16d (0.162&quot; x 3¼&quot;)</td>
<td>4&quot;</td>
<td>Blocked</td>
</tr>
<tr>
<td>110 and 210</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>230</td>
<td>4&quot;</td>
<td>4&quot;</td>
<td>6&quot;</td>
</tr>
<tr>
<td>360 and 560</td>
<td>3&quot;</td>
<td>4&quot;</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

(1) Stagger nails when using 4" on-center spacing and maintain ⅛" joist and panel edge distance. One row of fasteners is permitted (two at abutting panel edges) for diaphragms. Fastener spacing for TJ® joists in diaphragm applications cannot be less than shown in table. When fastener spacing for blocking is less than above, rectangular blocking must be used in lieu of TJ® joists.

(2) For non-diaphragm applications, multiple rows of fasteners are permitted if the rows are offset at least ⅛" and staggered.

(3) Can be reduced to 3" on-center for light gauge steel straps with 10d (0.148" x 1½") nails.

(4) The maximum allowable seismic design capacities may be increased by a factor of 1.4 for wind design applications.

(5) The design capacity of an unblocked diaphragm framed with TJ® joists 110, 210 or 230 joists may be multiplied by a factor of 1.18 if a solvent-based subfloor adhesive that meets ASTM D3498 (AFG-01) performance standards is used in combination with mechanical fasteners for sheathing attachment. See page 12 for Weyerhaeuser’s adhesive recommendations.

- Maximum spacing of nails is 18" on-center.
- 14 gauge staples may be substituted for 8d (0.113" x 2½") nails if minimum penetration of 1" is achieved.

**Also see nailing requirements on page 6**

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**Table also applies to the attachment of TJ® rim joists and blocking panels to the wall plate.**

**Web stiffeners required on both sides at B2W ONLY. See footnote 1 under span tables.**

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

**Backer block:** Install tight to top flange (tight to bottom flange with face mount hangers). Attach with ten 10d (0.128" x 3") nails, clinched when possible. Use 15 nails in multi-family applications.

**Filler block:** Nail with ten 10d (0.128" x 3") nails, clinched. Use ten 16d (0.135" x 3½") nails from each side with TJ® joists. Use 15 nails in multi-family applications.

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

**Flush bearing plate required. Maximum ¼" overhang permitted at beam.**

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

**Web stiffeners required on both sides over wall below** (must stack on wall above)

**Load from above**

**IRC S02.7 requires lateral restraint (blocking) at all intermediate supports in Seismic Design Categories D0, D1, and D2 to strengthen the floor diaphragm**

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**Trus Joist® TJ® Joist Specifier’s Guide**  TJ-4000  |  May 2013
Rim board detail A3 (shown below) satisfies conventional construction requirements. But if your project requires a designed solution, see Weyerhaeuser’s Rim Board Specifier’s Guide (Reorder #TJ-8000) which features rim board selection and installation information for lateral wind loads.

Rim board is often an important structural link in the ability of a home to resist lateral wind loads. It also transfers vertical load around the TJI® joists.

Rim board Installation table below.

Exterior Deck Attachment

Structural exterior sheathing

1¼" TJI® Rim Board or 1¼" TimberStrand® LSL

Flashing

Treated

2x_ ledger

See nailing schedule below. Maintain 2" distance (minimum) from edge of ledger to fastener.

Fastening of Floor Panels to 1¹⁄₈" TJ® Rim Board or 1¹⁄₄" TimberStrand® LSL

<table>
<thead>
<tr>
<th>Nail Size</th>
<th>Closest On-Center Spacing per Row</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rim Board Thickness</td>
<td>1¹⁄₄&quot;</td>
</tr>
<tr>
<td>8d (0.113&quot; or 0.131&quot; x 2½&quot;)</td>
<td>6&quot;</td>
</tr>
<tr>
<td>10d (0.128&quot; or 0.148&quot; x 3&quot;)</td>
<td>6&quot;</td>
</tr>
<tr>
<td>12d (0.128&quot; or 0.148&quot; x 3¾&quot;)</td>
<td>6&quot;</td>
</tr>
<tr>
<td>16d (0.162&quot; x 3½&quot;)</td>
<td>6&quot;</td>
</tr>
</tbody>
</table>

(1) Can be reduced to 4" on-center if nail penetration into the narrow edge is no more than 1¾" (to avoid splitting).

- If more than one row of nails is used, the rows must be offset at least ½" and staggered.
- 14 gauge staples may be substituted for 8d (0.113" x 2½") nails if minimum penetration of 1" is achieved.

Rim Board Installation

Specifications

A3

Conventional Construction, Code Minimum

A3.1, A3.2, A3.3, A3.4

Designed Solution

Rim Board Thickness

1¼" TJI® Rim Board or 1¼" TimberStrand® LSL

Plate Nail—16d (0.135" x 3¼"

16" o.c.

Floor Panel Nail—8d (0.131" x 2½"

6" o.c.

Toe Nail—10d (0.131" x 3½"

6" o.c.

Wall Sheathing

Per code

See Weyerhaeuser’s Rim Board Specifier’s Guide (Reorder #TJ-8000)

Vertical Load Transfer at Bearing

<table>
<thead>
<tr>
<th>Allowable Uniform Vertical Loads (PLF)</th>
<th>TJI® rim joist or blocking</th>
<th>2,100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1¼&quot; TimberStrand® LSL rim board or blocking</td>
<td>4,250</td>
<td></td>
</tr>
<tr>
<td>1¼” TJI® Rim Board or blocking</td>
<td>4,000</td>
<td></td>
</tr>
</tbody>
</table>

- Loads may not be increased for duration of load.

Also see nailing requirements on page 6
How to Use These Tables

1. Using Table A, Table B, or both if required, determine the hole shape/size and select the TJ® joist and depth.
2. Scan horizontally until you intersect the correct hole size column.
3. Measurement shown is minimum distance from edge of hole to support.
4. Maintain the required minimum distance from the end and the intermediate or cantilever support.

WARNING: Drilling, sawing, sanding or machining wood products generates wood dust. The paint and/or coatings on this product may contain titanium dioxide. Wood dust and titanium dioxide are substances known to the State of California to cause cancer. For more information on Proposition 65, visit wy.com/inform.

General Notes
- Holes may be located vertically anywhere within the web. Leave 1/4" of web (minimum) at top and bottom of hole.
- Knockouts are located in web at approximately 12" on-center; they do not affect hole placement.
- For simple span (5' minimum) uniformly loaded joists meeting the requirements for round or square holes, holes occur in the joist.
- Do not cut holes larger than 1/2" in cantilever reinforcement.
- Distances are based on the maximum uniform loads shown in this guide. For other load conditions or hole configurations, use Forte® software or contact your Weyerhaeuser representative.

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

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJ®</th>
<th>Round Hole Size</th>
<th>Square or Rectangular Hole Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>3&quot;</td>
<td>4&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>9½&quot;</td>
<td>110</td>
<td>1-5/8&quot;</td>
<td>1-5/8&quot;</td>
</tr>
<tr>
<td>111/4&quot;</td>
<td>210</td>
<td>1-0&quot;</td>
<td>1-0&quot;</td>
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<tr>
<td>14&quot;</td>
<td>210</td>
<td>1-0&quot;</td>
<td>1-0&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>210</td>
<td>1-0&quot;</td>
<td>1-0&quot;</td>
</tr>
</tbody>
</table>

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

### 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>Depth</th>
<th>TJ®</th>
<th>Round Hole Size</th>
<th>Square or Rectangular Hole Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>3&quot;</td>
<td>4&quot;</td>
<td>5&quot;</td>
</tr>
<tr>
<td>9½&quot;</td>
<td>110</td>
<td>2-0&quot;</td>
<td>2-0&quot;</td>
</tr>
<tr>
<td>11½&quot;</td>
<td>210</td>
<td>2-0&quot;</td>
<td>2-0&quot;</td>
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<td>14&quot;</td>
<td>210</td>
<td>2-0&quot;</td>
<td>2-0&quot;</td>
</tr>
<tr>
<td>16&quot;</td>
<td>210</td>
<td>2-0&quot;</td>
<td>2-0&quot;</td>
</tr>
</tbody>
</table>

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

**Do not cut holes larger than 1/2" in cantilever reinforcement.**
Cantilevers Less than 5” (Brick Ledge)
See Section A of cantilever table on page 11

- Roof truss span
- 40 psf live load
- 2'-0"
- L2 ≤ L1
- Minimum backspan = 2x cantilever length

Cantilevers 5” to 24”
See Section B of cantilever table on page 11

- Roof truss span
- 40 psf live load
- 2'-0"
- L2 ≤ L1
- Minimum backspan = 2x cantilever length

These Conditions are NOT Permitted:

- Do not bevel cut joist beyond inside face of wall.
- Do not use sawn lumber for rim board or blocking as it may shrink after installation. Use only engineered lumber.
- Do not install hanger overhanging face of plate or beam. Flush bearing plate with inside face of wall or beam.

TJI® joists are intended for dry-use applications

Trus Joist® TJI® Joist Specifier’s Guide  TJ-4000  |  May 2013
## Cantilever Reinforcement

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJI®</th>
<th>Roof Truss Span</th>
<th>Section A: Cantilevers less than 5&quot; (Brick Ledge)</th>
<th>Section B: Cantilevers 5&quot; to 24&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Roof Total Load 35 PSF 45 PSF 55 PSF</td>
<td>On-Center Joist Spacing 16&quot; 19.2&quot; 24&quot;</td>
</tr>
<tr>
<td>9½&quot; 11½&quot;</td>
<td>110</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11¼&quot; 14&quot;</td>
<td>210</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11¾&quot; 14&quot;</td>
<td>360</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11½&quot; 14&quot;</td>
<td>560</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### How to Use This Table

1. Identify TJI® joist and depth.
2. Locate the Roof Truss Span (horizontal) that meets or exceeds your condition.
3. Identify the cantilever condition (less than 5" to 5" to 24") and locate the Roof Total Load and On-Center Joist Spacing for your application.
4. Scan down to find the appropriate cantilever detail and refer to drawing on page 10:
   - Blank cells indicate that no reinforcement is required.
   - E4 may be used in place of E2 or E3 except when using TJI® 560 joists.
   - X indicates that cantilever will not work. Use Forte® and Javelin® software, or reduce spacing of joists and recheck table.

### General Notes

- Table is based on:
  - 15 psf roof dead load on a horizontal projection.
  - 80 psf 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.
  - Floor load of 40 psf live load and 10 psf dead load.
  - More restrictive of simple or continuous span.
  - Roof truss with 24" soffits.
- ¾” reinforcement refers to ¾” Exposure 1 plywood or other ¾” Exposure 1, 48/24-rated sheathing that is cut to match the full depth of the TJI® joist. Install with face grain horizontal. Reinforcing member must bear fully on the wall plate.
- Designed for 2x4 and 2x6 plate widths.
- For conditions beyond the scope of this table, including cantilevers longer than 24", use our Forte® and Javelin® software.
**FIRE-SAFE CONSTRUCTION**

The assemblies shown below are provided to help you specify and install Trus Joist® brand products with fire safety in mind. For more information on fire assemblies and fire-safe construction, please refer to the Weyerhaeuser Fire-Rated Assemblies and Sprinkler Systems Guide (Reorder #1500) or visit woodbywy.com.

**TJI® joists with Flak Jacket™ protection** meet 2012 IRC requirements for fire protection of floors and give you an effective one-hour-rated assembly for multi-family projects. This new solution helps you easily and efficiently meet code without impacting construction procedures or adding complexity to your jobs. TJI® joists with Flak Jacket™ protection are available in limited markets; contact your Weyerhaeuser representative for more information.

### Floor Assembly Compliant with 2012 IRC R501.3

- 1. Appropriate span-rated sheathing (Exposure 1)
- 2. TJI® 210, 230, 360, or 560 series joist with Flak Jacket™ protection

**Exposed**

**Single Layer**

- 1. Appropriate span-rated sheathing (Exposure 1)
- 2. TJI® joist
- 3. Single-layer of ½” gypsum wall board

**Double Layer**

- 1. 48/24 tongue-and-groove, span-rated sheathing (Exposure 1)
- 2. TJI® 210, 230, 360, or 560 joist with Flak Jacket™ protection and joist o.c. spacing of 16” or less. For wider spacing (up to 24” o.c.) use a minimum of 14” deep TJI® 230, 360, or 560 joists.
- 3. One layer of ¾” Pabco® Type C gypsum board
- 4. Resilient channels at 16” on-center

Optional: Glass fiber insulation, 3½” thick in TJI® joist cavity, between TJI® joists above the bottom flange.

**Note:** Use 90% of the published TJI® joist bending moment capacity.

**Single Layer**

- 1. 48/24 tongue-and-groove, span-rated sheathing (Exposure 1)
- 2. TJI® joist
- 3. Resilient channels (optional)*

Optional: Minimum 3½”-thick glass fiber insulation or non-combustible insulation, rated R-30 or less.*

*Resilient channels are required when insulation is used.

**ICC ES ESR-1153**

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### TIPS FOR PREVENTING FLOOR NOISE

Trus Joist® TJI® joists are structurally uniform and dimensionally stable, and they resist shrinking and twisting. This helps prevent gaps from forming around the nails between the joist and the floor panels—gaps that can potentially cause squeaks or other floor noise. Using TJI® joists can help you build a quieter floor, but only if the entire floor system is installed properly. This is because other components of the floor system, such as hangers, connectors, and nails can be a source of floor noise.

- **Properly Seat Each Joist in Hanger**
- **Use Adhesive and Special Nailing When Needed**
- **Prevent Shrinkage**
- **Avoid “Shiners”**

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* Weyerhaeuser recommends using solvent-based subfloor adhesives that meet ASTM D3498 (AFG-01) performance standards. When latex subfloor adhesive is required, careful selection is necessary due to a wide range of performance between brands.

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For more information and tips on how to prevent floor noise, refer to the Weyerhaeuser Prevention and Repair of Floor System Squeaks Technical Resource Sheet (Reorder #9009) or contact your Weyerhaeuser representative.
Joists must be laterally supported at cantilever and end bearings by shear blocking, hangers, or direct attachment to a rim board or rim joist. See Allowable Holes on page 9.

General Notes
- Unless otherwise noted, all details are valid to a maximum slope of 12:12.
- Web stiffeners are required if the sides of the hanger do not laterally support at least 3/8" of the TJI® joist top flange.

TJI® Joist Nailing Requirements at Bearing

### End Bearing (1 3/4" minimum bearing required)
- 8d (0.113" x 2 1/4") nail, one each side, 1 1/4" minimum from end

### Intermediate Bearing (3 1/2" minimum bearing required)
- Slopes 3:12 or less:
  - One 8d (0.113" x 2 1/4") nail each side. See detail R7.
  - Two 8d (0.113" x 2 1/4") nails each side, plus a twist strap and backer block. See detail R7S.
- When slope exceeds 3:12 for a 2x4 wall or 3:12 for a 2x6 wall, a beveled bearing plate or variable slope seat connector is required.

### Blocking to Bearing Plate
- 1 1/4" TJI® Rim Board or 1 1/4" TimberStrand® LSL:
  - Toe nail with 10d (0.113" x 3") nails at 6" on-center or 16d (0.135" x 3") nails at 12" on-center
- TJI® joist blocking:
  - 10d (0.128" x 3") nails at 6" on-center
- Shear transfer nailing:
  - Minimum, use connections equivalent to sheathing nail schedule

WARNING
Joists are unstable until laterally braced. See Warning Notes on page 5.

Safety bracing (1x4 minimum) placed at 8' on-center (6' on-center for TJI® 110 joists) and extended to a braced end wall. Fasten at each joist with two 8d (0.113" x 2 1/4") nails minimum.
**Intermediate Bearing**

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

Web stiffeners required on both sides at R7W ONLY

 Twist strap and backer block required at R7S with slopes greater than 3:12. See nailing requirements on page 13.

 Beveled bearing plate required when slope exceeds ¼:12

**Birdsmouth Cut**

*Allowed at low end of joist only*

Web stiffeners required on both sides at R1W ONLY

 Beveled bearing plate required when slope exceeds ¼:12

2x4 one side. Use 2x6 if joist spacing is greater than 24" on-center.

10d (0.128" x 3") nails at 8" on-center

Beveled 2x4 block

Beveled web stiffeners on both sides

**These Conditions are NOT Permitted**

- DO NOT cut holes too close to support.
- DO NOT bevel cut joist beyond inside face of wall.
- DO NOT overhang birdsmouth cut from inside face of plate.

Refer to Allowable Holes on page 9 for minimum distance from support.

TJI® joist flange must bear fully on the plate. See detail BC on page 15.
**Filler Block (Detail H6)**

- Additional blocking may be required for shear transfer.
- Filler block: Attach with ten 10d (0.128" x 3") nails, clinched. Use ten 16d (0.135" x 3½") nails from each side with TJI® 560 joists.
- Variable slope joist hanger. See pages 18 and 19. Beveled web stiffener required on both sides.

**Backer Block (Detail H6)**

- Additional blocking may be required for shear transfer.
- Backer block: Install tight to top flange (tight to top flange with top mount hangers). Attach with ten 10d (0.128" x 3") nails, clinched when possible.
- Variable slope joist hanger. See pages 18 and 19. Beveled web stiffener required on both sides.

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**ROOF DETAILS**

**Shear Blocking and Ventilation Holes (Roof Only)**

- Field trim to match joist depth at outer edge of wall or locate on wall to match joist depth.

**LSTA18 (Simpson or USP) strap with twelve 10d (0.148" x 1½") nails required at HSS with slopes greater than 3:12**

**LSTA24 (Simpson or USP) strap with twelve 10d (0.148" x 1½") nails required at H6S with slopes greater than 3:12**

**SB For TJI® joists with slopes of 10:12 to 12:12, the vertical depth of the shear blocking at bearing will require 1¼" TJI® Rim Board or 1¼" TimberStrand® LSL that is one size deeper than the TJI® joist. DO NOT use 1¼" TJI® Rim Board in ventilation-hole applications.**

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**D Factors (Cut Length Calculations)**

- Actual cut length can be approximated by multiplying the horizontal length by the slope factor (see table on page 17) and adding the D factor.

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**See General Notes and nailing requirements on page 13**

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See General Notes and nailing requirements on page 13
## HOW TO USE THIS TABLE

1. Determine appropriate live and dead load, and the load duration factor.
2. If your slope is 6:12 or less, use the Low slope column. If it is between 6:12 and 12:12, use the High column.
3. Scan down the column until you find a span that meets or exceeds the span of your application.
4. Select TJ® joist and on-center spacing.

## GENERAL NOTES
- Table is based on:
  - Minimum bearing length of 11½" end and 3½" intermediate, without web stiffeners.
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Minimum roof slope of 14:12.
- Total load values are limited to deflection of L/180 and live load is based on joist deflection of L/240.
- A support beam or wall at the high end is required. Ridge board applications do not provide adequate support.
- For flat roofs or other loading conditions not shown, refer to Weyerhaeuser software.
### Roof—115% and 125% Load Duration (PLF) for 6’–16’ Spans

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJI®</th>
<th>6'</th>
<th>8'</th>
<th>10'</th>
<th>12'</th>
<th>14'</th>
<th>16'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Snow 115%</td>
<td>Non-Snow 125%</td>
<td>Live Load L/240</td>
<td>Snow 115%</td>
<td>Non-Snow 125%</td>
<td>Live Load L/240</td>
</tr>
<tr>
<td>9½&quot;</td>
<td>110</td>
<td>289</td>
<td>314</td>
<td>218</td>
<td>237</td>
<td>175</td>
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<tr>
<td></td>
<td>210</td>
<td>321</td>
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<td>222</td>
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<td>201</td>
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<td></td>
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<td>449</td>
<td>488</td>
<td>338</td>
<td>368</td>
<td>272</td>
<td>295</td>
</tr>
</tbody>
</table>

### Roof—115% and 125% Load Duration (PLF) for 18’–28’ Spans

<table>
<thead>
<tr>
<th>Depth</th>
<th>TJI®</th>
<th>18'</th>
<th>20'</th>
<th>22'</th>
<th>24'</th>
<th>26'</th>
<th>28'</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total Load</td>
<td>Defl.</td>
<td>Total Load</td>
<td>Defl.</td>
<td>Total Load</td>
<td>Defl.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Snow 115%</td>
<td>Non-Snow 125%</td>
<td>Live Load L/240</td>
<td>Snow 115%</td>
<td>Non-Snow 125%</td>
<td>Live Load L/240</td>
</tr>
<tr>
<td>9½&quot;</td>
<td>110</td>
<td>83</td>
<td>86</td>
<td>64</td>
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<td>86</td>
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<td>11½&quot;</td>
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<td>124</td>
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</tbody>
</table>

* Indicates that Total Load value controls.

### Slope Factors

<table>
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<tr>
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<th>Factor</th>
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<tbody>
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<td>2½:12</td>
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<tr>
<td>3:12</td>
<td>1.031</td>
</tr>
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<td>3½:12</td>
<td>1.042</td>
</tr>
<tr>
<td>4:12</td>
<td>1.054</td>
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<td>1.118</td>
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<td>7:12</td>
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<td>10:12</td>
<td>1.302</td>
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<tr>
<td>11:12</td>
<td>1.357</td>
</tr>
<tr>
<td>12:12</td>
<td>1.414</td>
</tr>
</tbody>
</table>

### How to Use These Tables

1. Calculate actual total load in pounds per linear foot (plf).
2. Select appropriate Roof Joist Horizontal Clear Span. For slopes greater than 2:12, approximate the increased dead load by multiplying the joist horizontal clear span by the Slope Factor above.
3. Scan down the column to find a TJI® joist that meets or exceeds actual total load.

### General Notes

- Tables are based on:
  - Minimum bearing length of 1¾" end and 3½" intermediate, without web stiffeners.
  - Uniform loads.
  - More restrictive of simple or continuous span.
  - Minimum roof slope of ¼:12.
- Total Load values are limited to deflection of L/180. For stiffer deflection criteria, use the Live Load L/240 values.
<table>
<thead>
<tr>
<th>Depth</th>
<th>Joist</th>
<th>Single Joist—Top Mount</th>
<th>Single Joist—Face Mount</th>
<th>Face Mount Skewed 45° Joist Hanger(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>9½&quot;</td>
<td>110</td>
<td>TJI® Hanger Capacity</td>
<td>Hanger Capacity</td>
<td>Capacity (lbs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>975 10d N.A.</td>
<td>950 10d N.A.</td>
<td>1,220 16d 10d x 1½&quot;</td>
</tr>
<tr>
<td></td>
<td>210</td>
<td>TJI® Hanger Capacity</td>
<td>Hanger Capacity</td>
<td>Capacity (lbs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>975 10d N.A.</td>
<td>950 10d N.A.</td>
<td>1,330 16d 10d x 1½&quot;</td>
</tr>
<tr>
<td>11½&quot;</td>
<td>230</td>
<td>TJI® Hanger Capacity</td>
<td>Hanger Capacity</td>
<td>Capacity (lbs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>975 10d N.A.</td>
<td>950 10d N.A.</td>
<td>1,330 16d 10d x 1½&quot;</td>
</tr>
<tr>
<td></td>
<td>360</td>
<td>TJI® Hanger Capacity</td>
<td>Hanger Capacity</td>
<td>Capacity (lbs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>975 10d N.A.</td>
<td>950 10d N.A.</td>
<td>1,430 16d 10d x 1½&quot;</td>
</tr>
</tbody>
</table>

**General Notes**

*Bold italic* hangers require web stiffeners.

Capacities will vary with different nailing criteria or other support conditions; contact your Weyerhaeuser representative for assistance.

- Hanger capacities shown are either joist bearing capacity or hanger capacity—whichever is less. Joist end reaction must be checked to ensure it does not exceed the capacity shown in the tables.
- All capacities are for downward loads at 100% duration of load.
- Fill all round, dimple, and positive-angle nail holes.
- Use sloped seat hangers and beveled web stiffeners when TJI® joist slope exceeds ¼.
- Leave ½” clearance (¾” maximum) between the end of the supported joist and the header or hanger.
- Nails: 16d = 0.162” x ¾”, 10d = 0.148” x 3”, and 10d x 1½” = 0.148” x 1½”.

See additional notes on page 19

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## FRAMING CONNECTORS (USP STRUCTURAL CONNECTORS®)

<table>
<thead>
<tr>
<th>Joist Width</th>
<th>Single Joist—Top Mount</th>
<th>Single Joist—Face Mount(1)</th>
<th>Face Mount Skewed 45° Joist Hanger(1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depth</strong></td>
<td><strong>TJ(0)</strong></td>
<td><strong>Hanger</strong></td>
<td><strong>Capacity (lbs)</strong></td>
</tr>
<tr>
<td>9½&quot;</td>
<td>110</td>
<td>TH017950</td>
<td>975</td>
</tr>
<tr>
<td>11½&quot;</td>
<td>110</td>
<td>TH017118</td>
<td>975</td>
</tr>
<tr>
<td>14&quot;</td>
<td>110</td>
<td>TH017144</td>
<td>975</td>
</tr>
<tr>
<td>16&quot;</td>
<td>110</td>
<td>TH017160</td>
<td>975</td>
</tr>
</tbody>
</table>

### Support Requirements
- Support material assumed to be Trus Joist® engineered lumber or sawn lumber (Douglas fir or southern pine species).
- Minimum support width for single- and double-joist top mount hangers is 3".
- Minimum support width for face mount hangers with 10d and 16d nails (clinched) is 1½" and 1½", respectively.

### Footnotes:
1. Face mount hanger capacities may be increased up to 15% for snow roofs or 25% for non-snow roofs. Maximum increase for LSSU, LSSH, and LSSH hangers is 15%.
2. VPA connectors are allowed on slopes of 3:12 through 12:12 only.
3. LSSU, LSSH, and LSSH hangers can be field adjusted for slopes and skews of up to 45 degrees. Additional lateral restraints are required for 16° deep TJ® joists.
4. Mitre cut is required at end of joist.
5. TMP connectors are allowed on slopes of 1:12 through 6:12 only, and TMPH connectors are allowed on slopes of 6:12 through 12:12 only.
6. Capacity may be increased to 1,330 lbs if web stiffeners are used.

See General Notes on page 18

Trus Joist® TJ® Joist Specifier’s Guide  TJ-4000  May 2013
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You want to build solid and durable structures—we want to help. Weyerhaeuser provides high-quality building products and unparalleled technical and field assistance to support you and your project from start to finish.

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Walls: Get the best value out of your framing package—use TimberStrand® LSL studs for tall walls, kitchens, and bathrooms, and our traditional, solid-sawn lumber everywhere else. Cut down installation time by using TimberStrand® LSL headers for doors and windows, and Weyerhaeuser wall sheathing with its handy two-way nail lines.

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