This brochure is intended to provide general information for designer and end-user.
For further information or assistance with our open joist TRIFORCE®, please contact your Barrette Structural representative.

In keeping with its on-going product development engagement, Barrette Structural periodically revises its literature. Please visit our website www.openjoisttriforce.com to verify that this is an updated version.

www.openjoisttriforce.com
info@ojtriforce.com

Date Revised: March 2014
An unusual building

The open joist TRIFORCE® is manufactured in a new facility built with glued laminated lumber posts and beams, designed in function of the principles of sustainable development. Our plant with an area of 180 000 pi², is the largest industrial building using glued laminated lumber in eastern Canada.

Here are the principles of sustainable development that we have applied during this project:

- Support for the lumber industry and its workers.
- Third processing of a natural resource.
- Training of specialized workers, wood joist assemblers, whose expertise is already being used to advantage on other projects.
- Lumber derived from a certified forest that respects the principles of sustainable forestry.
- Use of a local and renewable resource.
- Energy savings.
- Reduction in greenhouse gases (GHG).
- Solar walls.
- Insulating with aesthetics in mind.
- Protecting the water table.
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Evaluation Reports

Canada

United-States

Canada

AME 300-00-E

#434B

FL#5828

CCMC-13474-R

ESR-2999

City of New-York

City of Houston

State of Florida

Open Joint TRIFORCE™ Series

1. Options

The options for the Canadian Commissioned Model Code (CCMC) and the United States Evaluation Report (ESR) are available. The options include:

- Conduct a review of the design and construction of the joint to ensure compliance with the relevant codes and standards.
- Conduct a visual inspection of the joint to ensure that all components are installed correctly.
- Conduct a water infiltration test to ensure that the joint is watertight.
- Conduct a load test to ensure that the joint can support the required loads.

2. Description

The Open Joint TRIFORCE™ series is a product that is designed to provide a solution for joint protection in construction projects. The product is designed to meet the requirements of the relevant codes and standards, and it is installed using the recommended installation methods and materials. The product is designed to be durable and to provide long-term performance in a variety of construction environments.

The product includes:

- A flexible joint component that is designed to accommodate movement and provide a watertight seal.
- A rigid joint component that is designed to provide structural integrity.
- A variety of materials and components that can be customized to meet the specific needs of the project.

The product is available in a range of colors and designs, and it can be installed using a variety of installation methods. The product is designed to be easy to install and to provide a long-term solution for joint protection in construction projects.
# Features and Benefits

<table>
<thead>
<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOLID SAWN KILN-DRIED Chords</td>
<td>• Wide nailing surface 2.5” and 3.5”</td>
</tr>
<tr>
<td></td>
<td>• Glued finger joints eliminate potential squeaking</td>
</tr>
<tr>
<td></td>
<td>• Dimensional stability</td>
</tr>
<tr>
<td></td>
<td>• Ease of installation</td>
</tr>
<tr>
<td>SOLID SAWN KILN-DRIED Webs</td>
<td>• 2” X 2” webs</td>
</tr>
<tr>
<td></td>
<td>• Most effective wood usage</td>
</tr>
<tr>
<td></td>
<td>• Environmentally-friendly</td>
</tr>
<tr>
<td>WEB STOCK OSB END DETAIL</td>
<td>• 24” trimmable end</td>
</tr>
<tr>
<td></td>
<td>• Trimmable one end only</td>
</tr>
<tr>
<td></td>
<td>• Manufactured in 2-foot increments</td>
</tr>
<tr>
<td>GLUED FINGER JOINTS TRIANGULATION</td>
<td>• Long-term performance</td>
</tr>
<tr>
<td></td>
<td>• Accuracy</td>
</tr>
<tr>
<td></td>
<td>• No plate corrosion</td>
</tr>
<tr>
<td></td>
<td>• No potential mechanical, electrical and plumbing damage due to metal connectors</td>
</tr>
<tr>
<td></td>
<td>• Eliminates potential squeaking</td>
</tr>
<tr>
<td>TRIANGULATED CONFIGURATION</td>
<td>• Proven</td>
</tr>
<tr>
<td></td>
<td>• Light handling</td>
</tr>
<tr>
<td></td>
<td>• No on-site thinking for holes to allow mechanical, electrical and plumbing installation</td>
</tr>
<tr>
<td></td>
<td>• Increased floor performance</td>
</tr>
<tr>
<td>QUALITY GUARANTEED</td>
<td>• Independent third-party inspection</td>
</tr>
<tr>
<td></td>
<td>• Individually tested to exceed load capacity</td>
</tr>
<tr>
<td></td>
<td>• Unrivaled floor performance</td>
</tr>
</tbody>
</table>

## Adjustment

![2x3" 24" 2x3"]

34 ⅜”

24” max

OSB Panel
The Barrette Structural open concept floor system

The strength of triangulation, accuracy of finger-jointed assembly, maximization of dimensional lumber and environmentally-friendly field adjustability, makes open joist TRIFORCE® product the only trimmable all-wood, open-webbed, finger-jointed, floor joists without metal plate connectors.

Reengineering wood components for your needs

For more than 25 years, OPEN JOIST 2000® products have demonstrated their strength and durability throughout North America and Europe. The open joist TRIFORCE® product is the logical continuity of the OPEN JOIST 2000® products also aiming for your "Peace of mind underfoot™"!

Identification

14" OJ318

- Grades: 14 = 1.4E
  15 = 1.5E
  18 = 1.8E
  20 = 2.0E

- Flange: 2X3"
  2X4"

- Depths: 9 ½"
  11 ¾"
  14"
  16"
### Design Values

#### OJ Series Reference Design Properties

**Allowable Stress Design (ASD)**

<table>
<thead>
<tr>
<th>Series</th>
<th>Depth</th>
<th>Flange Width</th>
<th>$Ma$</th>
<th>$Va$</th>
<th>$EI$ (x10^6 lb/in²)</th>
<th>$K$</th>
<th>Joist Weight (plf)</th>
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<td>16</td>
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<td>817</td>
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<td>1373</td>
<td>1088</td>
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<td>3.55</td>
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</tbody>
</table>

1) The tabulated design properties are reference design values for normal duration load. Reference allowable design moment and shear properties, $Ma$ and $Va$ must be corrected in accordance with applicable code adjustment factors.

2) Allowable moment capacity must not be increased by any repetitive member use factor.

3) Maximum deflection at mid-span is calculated as follows for a uniformly loaded joist.

\[
\text{Deflection}(\Delta) = \frac{5wL^4}{384EI} + \frac{wL^2}{K}
\]

Where:
- \(L\) = Span
- \(EI\) = Bending stiffness
- \(K\) = Shear deflection factor
- \(w\) = Uniform Load

---

5 | US Specifier Guide | Open Joist TRIFORCE®
Open Joist TriForce® Series Allowable Bearing Reactions

<table>
<thead>
<tr>
<th>Series</th>
<th>Depth</th>
<th>2x3 Block End (lbs)</th>
<th>OSB End (lbs)</th>
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<tr>
<td></td>
<td></td>
<td>1 ½&quot;</td>
<td>3 ½&quot;</td>
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<tr>
<td>OJ-300</td>
<td>9.5</td>
<td>1 514</td>
<td>1 830</td>
</tr>
<tr>
<td>OJ-400</td>
<td>11.875</td>
<td>1 581</td>
<td>1 951</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>1 595</td>
<td>2 059</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1 595</td>
<td>2 160</td>
</tr>
</tbody>
</table>

1) Unless Otherwise indicated, the tabulated reaction values are for normal duration of load and are permitted to be increased for other load durations in accordance with applicable code adjustment factors. These values are also limited by flange perpendicular to grain bearing stress of 425 psi.
2) End reactions require a minimum bearing length of 1 ½" linear interpolation between bearing lengths is permitted.
3) A length of up to 24 inches may be removed from the OSB end without modification of the tabulated allowable design properties.
4) Web Stiffeners must be installed in accordance with guidelines presented in this guide.

Stocking Lengths

Available Stocking Lengths

Open joist TRIFORCE® offers new dimensions in height and length. The new open joist TRIFORCE® is offered in standard sizes of the industry, 9 ½", 11 ¾", 14" and 16". Open joist TRIFORCE® has a new material configuration system based on a 24” adjustable OSB panel end. The simplified material configuration system offers a more efficient and economical product to our distributors and loyal customers.
### Maximum Allowed Floor Spans for residential application

#### Nailed & Glued Subfloor - Improved Criteria L/480

<table>
<thead>
<tr>
<th>Length</th>
<th>Series</th>
<th>Spacing o.c.</th>
<th>Subfloor thickness - CSP</th>
<th>Maximum Floor span c/c</th>
<th>Maximum Floor span c/c</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>12&quot;</td>
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<td>19.2&quot;</td>
<td>24&quot;</td>
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<td>OJ314</td>
<td>2x3</td>
<td>8&quot;-0&quot;</td>
<td>8&quot;-0&quot;</td>
<td>8&quot;-0&quot;</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>OJ314</td>
<td>2x3</td>
<td>10&quot;-0&quot;</td>
<td>10&quot;-0&quot;</td>
<td>10&quot;-0&quot;</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>OJ314</td>
<td>2x3</td>
<td>12&quot;-0&quot;</td>
<td>12&quot;-0&quot;</td>
<td>12&quot;-0&quot;</td>
</tr>
<tr>
<td>14'-0&quot;</td>
<td>OJ314</td>
<td>2x3</td>
<td>14&quot;-0&quot;</td>
<td>14&quot;-0&quot;</td>
<td>14&quot;-0&quot;</td>
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<tr>
<td>16'-0&quot;</td>
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<td>16&quot;-0&quot;</td>
<td>16&quot;-0&quot;</td>
<td>16&quot;-0&quot;</td>
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<td>OJ318</td>
<td>2x4</td>
<td>18&quot;-0&quot;</td>
<td>18&quot;-0&quot;</td>
<td>18&quot;-0&quot;</td>
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<td>20&quot;-0&quot;</td>
<td>20&quot;-0&quot;</td>
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<tr>
<td>22'-0&quot;</td>
<td>OJ418</td>
<td>2x4</td>
<td>22&quot;-0&quot;</td>
<td>22&quot;-0&quot;</td>
<td>22&quot;-0&quot;</td>
</tr>
</tbody>
</table>

#### Notes:
1. Spans apply to simple span application only.
2. Minimum end bearing length is 1½" except for bold spans minimum 1½" at the OSB section with web stiffeners.
3. Maximum spans are measured centerline to centerline of bearing and are based on uniformly loaded joists.
4. Dead load deflection is limited to L/240 and total load deflection is limited to L/240.
5. Live Load is limited to L/480.
6. The spans shown consider a minimum 5/8" thick rated sheathing nailed and glued to joist in accordance with the applicable code or a 3/4" at 24" o.c.
7. Allowable spans take into consideration the composite effect from glued and nailed subfloor for deflections.
8. Refer to appropriate sections of theSpecifier Guide for installation guidelines and construction details.
9. The nailing specifications are to be in accordance with in force building code and the adhesives used should comply with APA Specification AFG-01 or ASTM D3498. 10] [S] = Special grade, verify availability.
L/360 Span Chart

Maximum Allowed Floor Spans for residential application

**Nailed & Glued Subfloor - Improved Criteria L/360**

<table>
<thead>
<tr>
<th>Length</th>
<th>Series</th>
<th>Maximum Floor span c/c</th>
<th>Maximum Floor span c/c</th>
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</thead>
<tbody>
<tr>
<td>8'-0&quot;</td>
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<td>16'-0&quot;</td>
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<td>22'-0&quot;</td>
<td>OJ418</td>
<td>2x4</td>
<td>22'-0&quot;</td>
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</tbody>
</table>

**Notes:**
1) Spans apply to simple span application only.
2) Minimum end bearing length is 1½", except for bold spans minimum 1½" at the OSB section with web stiffeners.
3) Maximum spans are measured centerline to centerline of bearing and are based on uniformly loaded joists.
4) Dead load deflection is limited to L/240 and total load deflection is limited to L/240.
5) Live Load is limited to L/360.
6) The spans shown consider a minimum 5/8" thick rated sheathing nailed and glued to joist in accordance with the applicable code or a 3/4" at 24" o.c.
7) Allowable spans take into consideration the composite effect from glued and nailed subfloor for deflections.
8) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
9) The nailing specifications are to be in accordance with force building code and the adhesives used should comply with APA Specification AFG-D1 or ASTM D3498.
10) (S) = Special grade, verify availability.

---

**Maximum spans are measured centerline to centerline of bearing and are based on uniformly loaded joists.**

**Notes:**
1) Spans apply to simple span application only.
2) Minimum end bearing length is 1½", except for bold spans minimum 1½" at the OSB section with web stiffeners.
3) Maximum spans are measured centerline to centerline of bearing and are based on uniformly loaded joists.
4) Dead load deflection is limited to L/240 and total load deflection is limited to L/240.
5) Live Load is limited to L/360.
6) The spans shown consider a minimum 5/8" thick rated sheathing nailed and glued to joist in accordance with the applicable code or a 3/4" at 24" o.c.
7) Allowable spans take into consideration the composite effect from glued and nailed subfloor for deflections.
8) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
9) The nailing specifications are to be in accordance with force building code and the adhesives used should comply with APA Specification AFG-D1 or ASTM D3498.
10) (S) = Special grade, verify availability.
### 11.875°

<table>
<thead>
<tr>
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<th>Maximum Live Load (psf)</th>
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<td>314</td>
<td>236</td>
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<td>OJ381 2x3</td>
<td>255</td>
<td>185</td>
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<tr>
<td>18'-0&quot;</td>
<td>OJ418 2x4</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

### 14°

<table>
<thead>
<tr>
<th>Length</th>
<th>Series</th>
<th>Maximum Live Load (psf)</th>
<th>Maximum Live Load (psf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'-0&quot;</td>
<td>OJ314 2x3</td>
<td>319</td>
<td>236</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>OJ381 2x3</td>
<td>255</td>
<td>185</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>OJ318 2x3</td>
<td>316</td>
<td>236</td>
</tr>
<tr>
<td>14'-0&quot;</td>
<td>OJ415 2x4</td>
<td>98</td>
<td>75</td>
</tr>
<tr>
<td>16'-0&quot;</td>
<td>OJ418 2x4</td>
<td>59</td>
<td>45</td>
</tr>
<tr>
<td>18'-0&quot;</td>
<td>OJ418 2x4</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

### 16°

<table>
<thead>
<tr>
<th>Length</th>
<th>Series</th>
<th>Maximum Live Load (psf)</th>
<th>Maximum Live Load (psf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'-0&quot;</td>
<td>OJ314 2x3</td>
<td>324</td>
<td>239</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>OJ381 2x3</td>
<td>255</td>
<td>188</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>OJ318 2x3</td>
<td>316</td>
<td>236</td>
</tr>
<tr>
<td>14'-0&quot;</td>
<td>OJ415 2x4</td>
<td>98</td>
<td>75</td>
</tr>
<tr>
<td>16'-0&quot;</td>
<td>OJ418 2x4</td>
<td>59</td>
<td>45</td>
</tr>
<tr>
<td>18'-0&quot;</td>
<td>OJ418 2x4</td>
<td>47</td>
<td></td>
</tr>
</tbody>
</table>

Notes:
1) Uniform loads shown are for Full span (bearing included), higher loads could be applied using longer end bearing length.
2) Minimum end bearing length is 1½”, except for bold loads, minimum 1½” with web stiffeners at the OSB section.
3) Dead load deflection is limited to L/240 and Total load deflection is limited to L/240.
4) Live load deflection is limited to L/480.
5) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
6) The nailing specifications are to be in accordance with in force building code and the adhesives used should comply with APA Specification AFG-01 or ASTM D3498.
7) (S) = Special grade, verify availability.
### L/360 Load Chart

#### Maximum Allowed Live Load Chart for residential application

**Glued & Nailed Subfloor with Continuous Strongbacks at Mid Span**

<table>
<thead>
<tr>
<th>Length</th>
<th>Spacing o.c.</th>
<th>Subfloor thickness - CSP</th>
<th>Maximum Live Load (psf)</th>
<th>Maximum Live Load (psf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>287 211 174 136</td>
<td>272 196 158 121</td>
</tr>
<tr>
<td>10' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>177 120 102 81</td>
<td>162 114 90 66</td>
</tr>
<tr>
<td>12' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>117 84 68 51</td>
<td>102 69 53 6</td>
</tr>
<tr>
<td>14' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>82 58 45 45</td>
<td>67 43 43 43</td>
</tr>
<tr>
<td>16' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>59 40 40 40</td>
<td>44 44 44 44</td>
</tr>
<tr>
<td>18' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>76 59 50 50</td>
<td>70 43 43 43</td>
</tr>
</tbody>
</table>

**Notes:**

1. Uniform loads shown are for full span (bearing included), higher loads could be applied using longer end bearing length.
2. Minimum end bearing length is 1½", except for bold loads, minimum 1½" with web stiffeners at the OSB section.
3. Dead load deflection is limited to L/240 and Total load deflection is limited to L/240.
4. Live load deflection is limited to L/240.
5. Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
6. The nailing specifications are to be in accordance with in force building code and the adhesives used should comply with APA Specification AFG-01 or ASTM D3498.
7. (S) = Special grade, verify availability.

---

**5) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.**

**4) Live load deflection is limited to L/240.**

**3) Dead load deflection is limited to L/240.**

**2) Minimum end bearing length is 1½", except for bold loads, minimum 1½" with web stiffeners at the OSB section.**

---


<table>
<thead>
<tr>
<th>Length</th>
<th>Spacing o.c.</th>
<th>Subfloor thickness - CSP</th>
<th>Maximum Live Load (psf)</th>
<th>Maximum Live Load (psf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>314 232 191 149</td>
<td>299 217 176 134</td>
</tr>
<tr>
<td>10' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>233 171 140 109</td>
<td>218 156 125 94</td>
</tr>
<tr>
<td>12' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>157 114 92 71</td>
<td>142 99 77 56</td>
</tr>
<tr>
<td>14' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>111 79 63 48</td>
<td>96 64 48 48</td>
</tr>
<tr>
<td>16' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>81 57 45 45</td>
<td>66 42 42 42</td>
</tr>
<tr>
<td>18' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>76 53 42 42</td>
<td>61 42 42 42</td>
</tr>
<tr>
<td>20' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>61 38 35 35</td>
<td>44 44 44 44</td>
</tr>
<tr>
<td>22' 0&quot;</td>
<td>OJ314 2x3</td>
<td>5/8&quot; 5/8&quot; 5/8&quot; 3/4&quot;</td>
<td>51 35 35 35</td>
<td>34 34 34 34</td>
</tr>
</tbody>
</table>

**Notes:**

1. Uniform loads shown are for full span (bearing included), higher loads could be applied using longer end bearing length.
2. Minimum end bearing length is 1½", except for bold loads, minimum 1½" with web stiffeners at the OSB section.
3. Dead load deflection is limited to L/240 and Total load deflection is limited to L/240.
4. Live load deflection is limited to L/240.
5. Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
6. The nailing specifications are to be in accordance with in force building code and the adhesives used should comply with APA Specification AFG-01 or ASTM D3498.
7. (S) = Special grade, verify availability.
### Strongback Recommendation Chart

#### Mid Span Continuous Strongbacks Recommendation For Maximum Span Charts

<table>
<thead>
<tr>
<th>Length Series</th>
<th>Spacing o.c.</th>
<th>Subfloor thickness - CSP</th>
<th>Strongbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>8'-0&quot;</td>
<td>12&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>16&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>19.2&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24&quot;</td>
<td>3/4&quot;</td>
<td>None</td>
</tr>
<tr>
<td>10'-0&quot;</td>
<td>12&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>16&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>19.2&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24&quot;</td>
<td>3/4&quot;</td>
<td>None</td>
</tr>
<tr>
<td>12'-0&quot;</td>
<td>12&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>16&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>19.2&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24&quot;</td>
<td>3/4&quot;</td>
<td>None</td>
</tr>
<tr>
<td>14'-0&quot;</td>
<td>12&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>16&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>19.2&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24&quot;</td>
<td>3/4&quot;</td>
<td>None</td>
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<td>12&quot;</td>
<td>5/8&quot;</td>
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<td></td>
<td>16&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
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<tr>
<td></td>
<td>19.2&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24&quot;</td>
<td>3/4&quot;</td>
<td>None</td>
</tr>
<tr>
<td>18'-0&quot;</td>
<td>12&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>16&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>19.2&quot;</td>
<td>5/8&quot;</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>24&quot;</td>
<td>3/4&quot;</td>
<td>None</td>
</tr>
</tbody>
</table>

### Notes:
1. Specified continuous strongbacks installed at mid span shown, take into consideration a performance criterion.
2. Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
3. Live load deflection is limited to L/360.
4. This table of continuous strongback for maximum spans can also be used for Maximum spans when live load deflection is limited to L/480.
1. Except for cutting length, TRIFORCE® flanges should never be cut, drilled or notched.

2. Install TRIFORCE® joists so that top and bottom flanges are within $\frac{1}{2}”$ of true vertical alignment.

3. At the ends, joists must be restrained to prevent rollover. Use rim board or blocking panels.

4. For Cantilevered TRIFORCE® joists, brace top and bottom flanges, and brace ends with closure panels, rim board.

5. Apply concentrated loads only on the top flange. Concentrated loads shall not be suspended from the bottom flange with the exception of light loads, such as ceiling fans or light fixtures.

6. TRIFORCE® must be protected from weather prior to installation.

7. Joists are to be used in dry conditions only.

8. Never install a damaged TRIFORCE® joist.

9. When strongbacks are installed, the strongbacks must be of dry lumber.

10. When a joist interferes with a plumbing pipe, the joist may be moved up to $3”$ to allow piping. OSB Panel End openings are allowed per the Allowable Hole through the OSB Panel End chart (see page 25). When moving a joist, check subfloor thickness with code requirements when joist spacing exceeds $19.2”$ o.c.

11. End bearing length must be at least $1 \frac{1}{2}”$.

12. To transfer loads from above, rim boards, squash blocks or blocking panels shall be used at exterior walls and interior bearing walls.

13. Joists shall not be in direct contact with masonry or concrete.

14. Install all bracing and sheathing to each TRIFORCE® joist before applying any construction loads on the floor system. Stack building material over beams or bearing walls only, otherwise additional shoring material may be needed.

15. Nails installed perpendicular to the wide face of the flange shall be spaced not closer than $2 \frac{1}{2}$ inches o.c. for 8d common nails.

16. Details on the following pages show only TRIFORCE® specific fastener requirements. For other fastener requirements, see applicable building code.

17. The adhesives used for floor systems should comply to ASTM D3498-03 Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems. Follow manufacturer guidelines for field-glued floors.

All information in this document is general and is given as general information to an informed tradesman, that must have all the proper qualifications and knowledge for installing floor joists properly as per manufacturers specifications and as per local code.

The warranty shall not extend to products misused, neglected, subjected to abnormal storage, use or exposure or which have been altered in any manner or not maintained in accordance with published instructions. The products must be handled and installed in accordance with the manufacturer’s published instructions.
Storage & Handling

Storage Notes:

1. Keep TRIFORCE® bundles wrapped to protect from weather.
2. Use wood stickers to separate bundles under each automatically inserted stickers.
3. Always store, stack and handle TRIFORCE® vertically and level – never flat/ horizontal.
4. Do not store TRIFORCE® in direct contact with the ground.
5. Store longest material lowest to the ground.
6. For optimal moisture protection, keep TRIFORCE® at least 6 inches up off the ground.
7. To protect from dirt and weather, delay unwrapping the TRIFORCE® bundles until the time of installation and delivery.
8. Take care to avoid forklift damage. If the ground is unlevel in the storage area, reduce forklift speed to avoid “bouncing” the load.
9. When handling with a crane, pick up the load using a spreader if necessary to minimize handling stresses. Keep TRIFORCE® vertical.
10. Maintain stack height within safe limits.
11. Do not lift TRIFORCE® joist by top flange.
12. Do not stack other material on top of TRIFORCE® bundles.
13. Bundle wrap can be slippery, especially when wet. Avoid walking on material.
Rim Board Connection

Standard Sizes For Performance Rated Rim Boards

<table>
<thead>
<tr>
<th>Thickness (inches)</th>
<th>1 ⅛</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth (inches)</td>
<td>9 ½, 11 ⅞, 14, 16</td>
</tr>
<tr>
<td>Length (feet)</td>
<td>8 to 16</td>
</tr>
</tbody>
</table>

Design Capacities For Performance Rated Rim Board

<table>
<thead>
<tr>
<th>Rim Board Grade</th>
<th>Performance Category</th>
<th>H (lbf/ft)</th>
<th>V (lbf/ft)</th>
<th>Z (lbf)</th>
<th>P (lbf)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rim Board (C1)</td>
<td>1-1/8 or higher</td>
<td>180</td>
<td>4,400</td>
<td>3,000</td>
<td>350</td>
</tr>
<tr>
<td>Rim Board Plus (B2)</td>
<td>1-1/8 or higher</td>
<td>200</td>
<td>4,850</td>
<td>3,200</td>
<td>350</td>
</tr>
</tbody>
</table>

- These design values are applicable only to Rim Board applications in compliance with the connection requirements given in this document and shall not be used in the design of a bending member, such as joist, header, rafter, or ledger. All design values are applicable to the normal load duration. Design values may be adjusted for other load durations in accordance with the applicable code except that the bearing (vertical) load capacity (V) and concentrated vertical load capacity (P) are not permitted to be increased for any load durations shorter than the normal load duration. Toe-nailed connections are not limited by the 150 lbf/ft lateral load capacity noted for Seismic Design Categories D, E and F in Section 2305.1.4 of the IBC.
- The performance categories for these rim boards refers to the minimum thickness of the rim board.
- H = The horizontal (shear) load transfer capacity.
- V = The bearing (vertical) load capacity, which shall not be adjusted for load durations in accordance with the applicable code.
- Z = The lateral resistance of a ½-inch-diameter log screw.
- P = The concentrated vertical load capacity based on 4-½-inch bearing length.

A Structural Rim Board is recommended when the open joist TRIFORCE® Floor Joists are installed perpendicular or parallel on exterior bearing walls. It is not recommended to use open joist TRIFORCE® Floor Joists as solo starter joists on exterior bearing walls.

Rim to Joist

Attach Rim Board to End of Open Joist With (1) 8d Nail at Each Flange and (1) 8d Nail Centered at End Block

Toe-Nail Connection At Rim Board
Interior Bearing Wall Blocking

**Detail N3EP1M**
- Blocking
- Offset Bearing Wall
- Foundation, bearing wall or beam
- Verify in QuickTools Analyzer Assistant if the plywood reinforcement for concentrated top load is required

**Detail N3EP2M**
- Blocking
- Offset Bearing Wall
- Foundation, bearing wall or beam
- Verify in QuickTools Analyzer Assistant if the plywood reinforcement for concentrated top load is required

**Detail N3P1B**
- Blocking
- End-to-End Joist
- Foundation, bearing wall or beam

**Detail N3P2B**
- Blocking
- End-to-End Joist
- Foundation, bearing wall or beam
When Non Load Bearing Walls above are installed parallel to the open joist TRIFORCE® below, two methods are recommended.

1. Add a supporting Joist under the Wall above.

2. Add 2x support or ladder bracing every 2’ on center with Simpson Z28 clips as shown below or equivalent.

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Ga</th>
<th>Dimensions</th>
<th>Fasteners</th>
<th>Allowable Download</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>W</td>
<td>H</td>
<td>B</td>
</tr>
<tr>
<td>Z2</td>
<td>20</td>
<td>2 6/16</td>
<td>1 1/2</td>
<td>1 1/4</td>
</tr>
<tr>
<td>Z4</td>
<td>12</td>
<td>1 1/2</td>
<td>3 1/2</td>
<td>2 1/2</td>
</tr>
<tr>
<td>Z28</td>
<td>28</td>
<td>2 6/16</td>
<td>1 1/2</td>
<td>1 1/4</td>
</tr>
<tr>
<td>Z38</td>
<td>28</td>
<td>2 6/16</td>
<td>2 1/2</td>
<td>1 1/4</td>
</tr>
<tr>
<td>Z44</td>
<td>12</td>
<td>2 3/4</td>
<td>3 1/2</td>
<td>2 1/2</td>
</tr>
</tbody>
</table>

1) Z28 and Z38 do not have nail holes. Fastener quantity and type shall be per Designer.
2) Allowable loads have been increased 25% for roof loading (Z clips), no further increase allowed, reduce where other loads govern.
3) Z4 loads apply with a nail into the top and a nail into the seat.
4) NAILS: 16d = 0.162” dia. x 3 3/8” long, 10d x 1 1/2” = 0.148” dia. x 1 3/8” long. See other nail sizes and information.
Perpendicular Blocking

Perpendicular I-Joist Blocking:

I-Joist perpendicular blocking or equivalent @ 24” on center. Attaching the Wood-I or I-Joist blocking with (2) 3 ½” (16d) nails to the top and bottom chords of the open joist TRIFORCE® and (1) 2 ½” (8d) nails through the Rim Board into the top and bottom chord of the I-Joist blocking. Secure the I-Joist blocking to the sole plate with (1) 3 ½” (10d) nails each side of the bottom chord.

**Detail N6R1B**

- PERPENDICULAR BLOCKING AT EXTERIOR WALL
- Fixed 2x4 with nails [0.122” x 3”]
- 2 at top, 2 at bottom, hanger L50 or equivalent.
- Joist blocking required as per local building code for lateral wall bracing (max 32” c/c)
- APA Rimboard See detail N2P
Cantilevers

Open joist TRIFORCE® Cantilevers can be applied to accommodate Balconies, Brick Ledge or Water Ledge or 2nd Story Wall support. Verification of loading will determine what type if any reinforcement may be required. Please consult your open joist TRIFORCE® Representative for any questions concerning cantilever situations.

**Detail N12P**
- Wood piece
- Solid lumber fixed
- Bearing wall or beam
- Filling 5/8” on OSB panel

**Detail N8PB**
- Rimboard OSB 1 1/8”
- Blocking
- Additional bracing from bearing wall at cantilever to center of the joist 1x3 at 16” o.c. or 1x4 at 24” o.c. or 2x4 at 48” o.c.

**Detail N2BP**
- 1-2x6 post on each side of the joist, 1/8” less than the space between the frames.

**Detail 13**
- Solid lumber for leveling
- Support fixed to joist

**MULTIPLE LEVEL BRICK AT LOWER LEVEL**

**MULTIPLE LEVEL BRICK AT LOWER LEVEL**
Steel Beam Connections with Hangers

**Detail N15P1**
- Steel beam
- Wood filler fixed to beam
- Hanger required

* top mount or face mount hangers

**Detail N15EP**
- Steel beam
- Wood filler fixed to beam
- Hanger required

* top mount or face mount hangers
Steel Beam Connections without Hangers

**Detail 14T**

- **Steel Beam Bottom Flange Bearing Hanger Not Required**
- Blocking not shown for clarity
- Wood filler fixed to beam

**Detail N14P**

- **Steel Beam Bottom Flange Bearing Hanger Not Required**
- 1/4" max.
- Blocking not shown for clarity
- Wood filler fixed to beam
Multiple Joist Connectors (MJC)  
For Concentrated Side Load

**Detail MJC2**
- Load sharing clip center on point load, fixed to joist with 1 1/2" nails (10d).

**Detail MJC4**
- Load sharing clips on each side of the point load, fixed to joist with 1 1/2" nails (10d).

**Detail MJC6**
- Load sharing clips on each side of the point load, fixed to joist with 1 1/2" nails (10d).

**Detail MJC8**
- Load sharing clips on each side of the point load, fixed to joist with 1 1/2" nails (10d).
Reinforcement for Concentrated Side Load

**Detail N10V11P**
- Filler 24" of length, center on, 1/2" Plywood or OSB, to the diagonals or OSB panel with adhesives and 2" nails at 3" o.c.
- For 2x3 Joist: 1 ply if fixed to the diagonals or 2 plies if fixed to OSB end panel.
- For 2x4 Joist: 2 plies if fixed to the diagonals or 3 plies if fixed to OSB end panel.

**Detail N10V12P**
- Filler 24" of length, center on, 1/2" Plywood or OSB, to the diagonals or OSB panel with adhesives and 2" nails at 3" o.c.
- For 2x3 Joist: 1 ply if fixed to the diagonals or 2 plies if fixed to OSB end panel.
- For 2x4 Joist: 2 plies if fixed to the diagonals or 3 plies if fixed to OSB end panel.

**Detail N10V21P**
- Filler 24" of length, center on, 1/2" Plywood or OSB, to the diagonals or OSB panel with adhesives and 2" nails at 3" o.c.
- For 2x3 Joist: 1 ply if fixed to the diagonals or 2 plies if fixed to OSB end panel.
- For 2x4 Joist: 2 plies if fixed to the diagonals or 3 plies if fixed to OSB end panel.

**Detail N10V22P**
- Filler 24" of length, center on, 1/2" Plywood or OSB, to the diagonals or OSB panel with adhesives and 2" nails at 3" o.c.
- For 2x3 Joist: 1 ply if fixed to the diagonals or 2 plies if fixed to OSB end panel.
- For 2x4 Joist: 2 plies if fixed to the diagonals or 3 plies if fixed to OSB end panel.
Reinforcement for Concentrated Top Load

**Detail N11VS4**

- Reinforcement fixed to each side of the top and bottom chord with adhesives and 3” nails at 5” o.c.
- Web stiffener under concentrated load, 2X4 fixed to each side to reinforcement with adhesives and 4 X 2-1/2” nails.

**Detail N11V**

- Reinforcement fixed to each side of the top and bottom chord with adhesives and 3” nails at 5” o.c.

**Detail N11VS**

- Reinforcement fixed to each side of the top and bottom chord with adhesives and 3” nails at 5” o.c.
- Web stiffener on both sides.
### Allowable OSB Panel End Hole Penetrations

#### Holes sizes and locations - Simple span

<table>
<thead>
<tr>
<th>Joist Depth</th>
<th>Joist Series</th>
<th>Round hole diameter only (in)</th>
<th>Minimum distance from inside face of support to beginning of hole (ft-in)</th>
<th>Max Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.5&quot;</td>
<td>OJ314</td>
<td>0’ 5”</td>
<td>0’ 5” 0’ 5” 0’ 5” 1’ 6”</td>
<td>16’ 0”</td>
</tr>
<tr>
<td></td>
<td>OJ414</td>
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<tr>
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<td>18’ 0”</td>
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<tr>
<td></td>
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<td>22’ 0”</td>
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<tr>
<td></td>
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<td>22’ 0”</td>
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<tr>
<td></td>
<td>OJ418</td>
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<td>0’ 6” 0’ 9” 1’ 6” 2’ 2”</td>
<td>26’ 0”</td>
</tr>
<tr>
<td>16&quot;</td>
<td>OJ314</td>
<td>0’ 6”</td>
<td>0’ 6” 0’ 6” 0’ 6” 0’ 6” 0’ 6” 0’ 6” 0’ 9” 1’ 6”</td>
<td>16’ 0”</td>
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<tr>
<td></td>
<td>OJ315</td>
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<td>20’ 0”</td>
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<td>OJ418</td>
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<tr>
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<td>0’ 6”</td>
<td>0’ 6” 0’ 9” 1’ 6” 2’ 2”</td>
<td>26’ 0”</td>
</tr>
</tbody>
</table>

#### Notes
1) This table is based on uniformly loaded floor with a design live load of 40 psf dead load of 15 psf and a deflection limit of L/360.
2) This table may be used for floor joist spacing of 24 inches on center or less.
3) Residential design with simple span only. No cantilever
4) Do not cut first vertical web. Distance base on a full length panel

Contact your TRIFORCE® representative for more details.

### Mechanical Clearances

<table>
<thead>
<tr>
<th>Mechanical Opening Dimension</th>
<th>Round</th>
<th>Square</th>
<th>Rectangular</th>
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<tbody>
<tr>
<td>Depth</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>9¾&quot;</td>
<td>5”</td>
<td>4” x 6”</td>
<td>3” x 9”</td>
</tr>
<tr>
<td>11¼”</td>
<td>7½”</td>
<td>5¼” x 5¼”</td>
<td>3” x 13”</td>
</tr>
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<td>14&quot;</td>
<td>8½”</td>
<td>6½” x 6½”</td>
<td>3” x 14”</td>
</tr>
<tr>
<td>16&quot;</td>
<td>9½”</td>
<td>7½” x 7½”</td>
<td>3” x 15”</td>
</tr>
</tbody>
</table>
Strongbacks

Strongbacks must be of dry lumber and secured with 2 spiral or resined 3” nails or 2 - 3” screws at mid-span, to a vertical brace or diagonal web.

Strongback can be cut between 2 joists for ducts, pipes and wires if needed, but at least 3 consecutive joists must remain attached together.

9 ½” = 2x4
11 7/8” = 2x4
14” = 2x4 or 2x6
16” = 2x6 or 2x8

Detail N5

**Strongback (at mid span)**

**Option #1**

- 2x3 flanges: 1 - 3” (10d) through bottom flange and 1 - 3” (10d) through the diagonal, adding adhesive will insure long term performance
- 2x4 flanges: 2 - 3” (10d) through bottom flange and 1 - 3” (10d) through the diagonal.

Adding adhesive will ensure long term performance. Gun nails can be substituted with 3” screws.

**Option #2 (suggested)**

- Secure vertical side block (2x4) as per detail, with 2 nails* to both chords and strongback to vertical with 2 nails*. *(gun nails 0.122” x 3 1/4”)

Adding adhesive will provide an ultimate connection for high floor performance. Gun nails can be substituted with 3” screws.

**Strongback Overlap**

Joint cover of 32”, center on splice (same height as strongback 1 and 2)
For more than a decade the National Building Code of Canada has introduced a method of calculation which takes into account the performance of a floor as a whole, i.e., the ability of the Assembly to reduce vibrations and deflection induced by any movement.

Essentially, we feel both when someone moves on a floor where we are sitting, deformation is induced by the weight of this person and vibration due to the shock wave imposed by the movement of this person.

For several years the engineered wood industry has advocated a deflection criteria of L/480, more severe than the minimum standard of the National Building Code, however, this approach was assessing only one part of the performance of the floor, deflection.

The Calculation method advocated by the CNBC takes account of two factors that can influence the performance of floor, making it much more efficient. For these reasons, since the beginning of the 2000s, the method of calculation is mandatory and replace the standard of L/480 in Canada.

To comply with these requirements the vibration test is an integral part of our design software and can assess the performance of several floor assemblies. This option is also available in our US version of the software to help providing the best floor solution to end-users.

The advantage of the concept of open web joists...

One of the ways to effectively increase the performance of a floor, is to increase transversal rigidity, that is, to link perpendicular joists. Much of this transversal link is through the subfloor.

With the concept of the open web joist, the addition of a continuous strongback in solid wood contributes to the effective link which will have a major impact on the performance of the floor. In addition, the ease with which these continuous strongback can be installed and especially the effectiveness of nailing make its installation a MUST.

Other methods can be used to ensure good performance of your floor, for example:

- The use of a subfloor **nailed and glued** will have a beneficial effect providing a link more effective between joists and subfloor while eliminating the risk of nose due to a poorly nailed subfloor.
- The use of a thicker subfloor will also help increase the performance of your floor by increasing the distribution of loads more between the joists.
- Reducing Spacing or increase the height of the joists would also increase floor performance.

Why the Industry still uses the L/480 concept?

Normally this notion should have been replaced by the concept of the Assembly floor, it is wrong to claim that only reducing joists deflection prevents vibration problems.

Assembly approach is much more efficient, the last ten years have shown.

Due to the complexity of the method of calculation and the wide range of possibility of assemblages, some manufacturers have been slow to update with this concept.

How can I get an idea of the property of these additions

Here are a few examples:

- **Assembly floor base**
  - Subfloor ⅝” only nailed
  - Height 11 ⅞
  - Allowable span: 14’ 5”

- **Use of a subfloor glued and nailed**, Allowable span: 15’ 9”

- **Use of a continuous link and a subfloor nailed and glued**, Allowable span: 17’ 2’

Keeping in mind that a factor of 0.5 assumes a greater floor performance than 0.99.

With a span of 14’ 5”, the floor performance ratio is 0.99, with the same span adding a glued subfloor, this ratio drops to 0.76, and if a continuous strongback is added, this ratio, is now 0.60, a 40% increase in floor performance.
Fire Performance

Since 1990, a lot of work has been done on fire rated floor and wall assemblies in Canada through the National Research Council and in US. Most Engineered product manufacturers team up to help providing guidelines but moreover typical floor assemblies to end users like architects and builders. This large scale effort conducted by NRC, lead to the many publications of floor assemblies including engineered wood products in section A-9.10.3.1.B of the National Building Code.

In this section more than 300 assemblies for engineered products are listed with acoustical performance rating (STC/IIC) and most of them are fire rated.

In US, the American wood council has also published a document entitled «Design for Code Acceptance – Fire rated wood frame wall and floor/ceiling assemblies» which also provides generic details for engineering wood products.

Open Joist TRIFORCE® Fire Performance Rating?

Historically, the OpenJoist and the TRIFORCE® products have outperformed other types of engineered wood products like I-Joist or Floor Trusses using metal connectors. OpenJoist has, in its web material, a larger thermal mass that dictates a longer time to increase in temperature and therefore enhance its fire resistance; this thermal mass increase is even more significant when strongbacks are in place.

Moreover the open configuration will increase the lateral heat transfer and allows increased thermal transmission evenly throughout the void spreading out the elevated temperature and again enhancing the fire performance of the structure.

Again today with the introduction of the new generation of OpenJoist products – TRIFORCE®, our product has demonstrated outstanding fire performance. Both OpenJoist products carry a 1 hour rating with 1 layer of ⅝ gypsum board Type C for all flange sizes and depths. We are one of the few that still provide this 1 hour fire rated assembly in its simplest form which greatly expedites its field installation.

Based on its outstanding fire performance, the open joist TRIFORCE® product can be used in any of the listed assemblies of the National Building code providing equivalent fire resistance.

- Fire rated Assembly – 1 hour with 1 layer of ⅝ type C
- Fire rated Assembly – 1 hour with 2 layers of ½ type C
- Fire rated Assembly – 45 minutes 1 layer of ⅛ type X

1. TRIFORCE®
2. Strongbacks
3. Resilient Channels
4. Gypsum Board
5. Insulation
6. Sub-Floor
1- Option 2

Option 1: Install two layers of nominal 23/32-inch thick tongue and groove plywood subfloor sheathing. Apply a nominal 1/8-inch bead of adhesive meeting the following requirements: ASTM D 3498 Standard Specification for Adhesives for Field Gluing Plywood to Lumber Framing for Floor Systems, meets American Plywood Association specifications AFG-01. Apply the base layer of sheathing to the top side of the wood truss (Item 2) and secure using 2-inch long X 0.113-inch diameter smooth shank nails perimeter and 12-inches on center in field. Install the face layer of sheathing over the base layer with a 24-inch overlap of joints. Secure face layer using 3-inch long, 0.12-inch diameter smooth shank nails spaced 6-inches on center in the field. Minimum topping thickness for lightweight concrete or nominal weight concrete is 1-1/2-inches. Minimum topping thickness for proprietary gypsum/cement/sand topping is 3/4-inch.

Option 2: Install one layer of nominal 23/32-inch thick tongue and groove plywood subfloor sheathing. Apply a nominal 1/8-inch bead of adhesive meeting the following requirements: ASTM D 3498 Standard Specification for Adhesives for Field Gluing Plywood to Lumber Framing for Floor Systems, meets American Plywood Association specifications AFG-01. Apply the sheathing to the top side of the wood truss (Item 2) and secure using 2-inch long X 0.113-inch diameter smooth shank nails spaced 6-inches on center in the field. Minimum topping thickness for lightweight concrete or nominal weight concrete is 1-1/2-inches. Minimum topping thickness for proprietary gypsum/cement/sand topping is 3/4-inch.

2- Structural members:

Use a minimum 9-1/2-inch open joist TRIFORCE® Joist spaced at a maximum of 24-inches on-center. Fasten wood truss to rim board with 2-3/8-inch long, 8d common nails. Fasten 1 nail through the rim board into the end of each flange, and one on each side of the truss web into the bearing plate.
3- Support :
Install strongback consisting of 2x6 and 2x4 lumber. Install strongback through the closest bottom open truss to the center on the wood truss (Item 2). Secure 2x4 lumber to the wood truss (Item 2) using 3-1/4-inch long, 12d common nails and adhesive. Secure the strongback to each wood truss (Item 2) using 2-1/4-inch long, 12d common nails and adhesive meeting the specifications above.

4- Resilient channels :
Install ½-inch deep, 2-1/8-inch wide nominal 25 GA galvanized steel "hat shaped" (RC-2) channels spaced 16-inches on-center and applied perpendicular to the Wood Truss, ensuring channels are installed back-to-back at butt joints of the gypsum board (Item 5). Secure resilient channels to the bottom flange of each Wood Truss (Item 2) using number 6, 1-5/8-inch long Type W coarse thread drywall screws.

5- Gypsum Board :
Install 1 layers of 5/8" of Gypsum Board Type C. Long edges located between joists perpendicular to the resilient channels (Item 4) using number 6-incches, 1-1/4-inch long Type S screws spaced 6-inches on center with a minimum distance of 1-1/2-inches from the panel edges. Joints are taped and finished with 2 layers of compound.

6- Insulation :
Install nominal 3-inch thick Roxul Safe’n Sound mineral wool insulation press fit between the bottom flanges of the wood truss (Item 2).

Reference: Intertek report DTM/FWT 60-10 for a 1-hr Fire Resistance rated floor assembly
Sound Performance

Acoustical Performance
Even if Open Joist published its own acoustical performance rating, once again, the listed assemblies of section A-9.10.3.1.B starting at assembly F22 can be used in your project. Moreover, as part of the NCR effort a software has been designed and available on NRC website can help you out in finding the proper performance for your need.

STC and IIC Defined
Since late 90’s, building codes have stringent requirements of acoustical performance, two main components of acoustical analysis are set as guidelines for assessing noise generated in a building.

These two methodologies are Impact Insulation Class (IIC) and a Sound Transmission Class (STC)

Impact Insulation Class – the impact insulation class would be a rating in Decibel on how well a floor attenuates impact sounds, such as footsteps

Sound Transmission Class – the sound transmission class would rate in decibel how well a floor or a partition wall would attenuate airborne sound, such as music.

For both cases higher figures are better results

Floor/Ceiling Assembly Ratings for Multi-family building

How do we increase acoustical performance?
As mentioned above, a lot of efforts were put toward acoustical performance, mostly for multifamily complexes and high-end condominiums where sound transmission takes all its meaning. After decades of testing NRC has developed tables to help architects and builders in finding the proper floor assembly.

Like, fire performance, acoustic performance will be dictated by the floor assembly, based on the NRC tables published in the NBCC in annex A-9.10.3.1.B and proprietary testing on OJ2000 and open joist TRIFORCE®, we have tried to clearly express how to increase the acoustical performance of a floor.
QuickTools Software

Barrette Structural has created an easy to use, sophisticated, state of the art software solution designed to suit all of our customer’s needs, focusing on user friendliness, detailed engineering analysis, quotes, orders and layouts.

Our solutions will help your company on every level, from whole floor analysis to individual member sizing.

QuickTools Layout Assistant is a fully integrated 3D software solution that easily provides a robust layout and open joist TRIFORCE® design solution as well as the full engineering analysis required by major building codes throughout North America and Europe. Quickly draw Walls, Beams, Columns, Openings, Headers and open joist TRIFORCE® and quickly analyze the load transfer. QuickTools Layout Assistant is available for download and can be obtained from an open joist TRIFORCE® Representative via download.

QuickTools Analyzer Assistant is a single member sizing software that enables Engineers, Architects and Designers to size the open joist TRIFORCE® floor joists. QuickTools Analyzer Assistant is available as a stand alone software for download and can be obtained from an open joist TRIFORCE® Representative via download.

Hardware Requirements
- Multi-Core Intel Xeon, or i-Series processor or AMD equivalent with SSE2 technology
- 2GB Ram (Min)
- Windows 7, Vista or XP Professional
- DirectX® 10 capable graphics card
- 2 GB free disk space
- MS-Mouse or 3Dconnexion compliant device
- Internet connection for license registration and prerequisite component download.

www.openjoistriforce.com

US Specifier Guide
### Single Open Joist TRIFORCE® - U.S./Allowable Load (lbs)

#### Top Flange

<table>
<thead>
<tr>
<th>Joist Height</th>
<th>B Dim</th>
<th>Fastener Type</th>
<th>Uplift</th>
<th>Down Load</th>
<th>Model</th>
<th>Dim</th>
<th>Fastener Type</th>
<th>Uplift</th>
<th>Down Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 ¼</td>
<td>56/9</td>
<td>2 6-10d</td>
<td>105</td>
<td>1520</td>
<td>IU5S.56/9.25</td>
<td>2 8-10d</td>
<td>75</td>
<td>950</td>
<td>815</td>
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<tr>
<td>11 ⅞</td>
<td>56/11</td>
<td>2 6-10d</td>
<td>105</td>
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<td>IU5S.56/11.88</td>
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<td>1020</td>
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<td>2 6-10d</td>
<td>105</td>
<td>1520</td>
<td>IU5S.56/14</td>
<td>2 12-10d</td>
<td>75</td>
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<td>1220</td>
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#### Face Mount

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<th>Uplift</th>
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<th>Dim</th>
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<th>Down Load</th>
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<tbody>
<tr>
<td>9 ¼</td>
<td>56/9</td>
<td>2 6-10d</td>
<td>105</td>
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<td>IU5S.56/9.25</td>
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<tr>
<td>11 ⅞</td>
<td>56/11</td>
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<td>1520</td>
<td>IU5S.56/14</td>
<td>2 12-10d</td>
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<tr>
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#### 45° Skew

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<th>Uplift</th>
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<th>Model</th>
<th>Dim</th>
<th>Fastener Type</th>
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<tbody>
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<td>56/9</td>
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<td>105</td>
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<td>2 14-10d</td>
<td>75</td>
<td>1660</td>
<td>1425</td>
</tr>
</tbody>
</table>

### ITS - 18 gauge

The ITS top flange hanger with its Strong-Grip™ seat and Funnel Flange™ secures joists with flange thicknesses from 11/8" – 11/2" and installs faster than any other top flange hanger. Joist nails are not required.

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by joist manufacturer.
2) THAI hangers require a minimum of 4 top and 2 face nails installed.
3) The B Dim is the length of the hanger seat.

Supports 1 1/8" to 1 1/2" thick flanges

Typical ITS Installed on LVL
**IUS - 18 gauge**

The IUS is a hybrid hanger that incorporates the advantages of face-mount and top-flange hangers. Joist nails are not required.

**SUR/L - 16 gauge**
**HSUR/L - 14 gauge**

All models are skewed 45°. Normally accommodates a 40° - 50° skew. The installation of these hangers does not require a beveled end cut.

**THAI - 18 gauge**

This hanger has extra long straps and can be field-formed to give height adjustability and top flange hanger convenience. Positive angle nailing helps minimize splitting of the joist’s bottom flange. Minimum nailing is shown in the table above. Strap must be field-formed over the top of the header by a minimum of 2 1/2". Web stiffeners required when used with joists.
### Double Open Joist TRIFORCE® - U.S./Allowable Load (lbs.)

#### Joist Height

<table>
<thead>
<tr>
<th>Joist Height</th>
<th>Top Flange</th>
<th>Face Mount</th>
<th>45° Skew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model</td>
<td>Fastener</td>
<td>Uplift</td>
</tr>
<tr>
<td></td>
<td>B Dim</td>
<td>Type</td>
<td>(160)</td>
</tr>
</tbody>
</table>

#### Adjusted Height

<table>
<thead>
<tr>
<th>Joist Height</th>
<th>Adjustable Height</th>
<th>Field Slope &amp; Skew</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model</td>
<td>Fastener Type</td>
</tr>
<tr>
<td></td>
<td>B Dim</td>
<td>Header</td>
</tr>
</tbody>
</table>

#### Notes

1. Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by joist manufacturer.
2. The B Dim is the length of the hanger seat.
3. THAI hangers require a minimum of 4 top and 2 face nails installed. THAI-2 must be special ordered. Specify hanger seat width between 3⅛” and 5⅝”.
4. LSU’s can not be field skewed. Skew option must be factory ordered, specify skew angle.
5. Skew option must be special ordered. Specify skew angle and direction (e.g. HU412-2x, SKR45°).

### B - 12 gauge

#### LBV - 14 gauge

The B series offers versatility for joists and SCL lumber. Enhanced load capacity widens the range of applications for these hangers. The LBV is designed especially for use with multiple ply headers 11/2” to 13/4” thick, and may be used for weld-on applications.

![Typical Double LBV Hanger Installation](image)

![LBV (B Similar)](image)

BA, B, HB and LBV are acceptable for weld-on applications (LBV shown). See Installation Information.
MIT – 16 gauge

The MIT’s Positive Angle Nailing helps minimize splitting of the joist’s bottom flange. Features uplift capacity and extended seat design (to allow installation of slightly undercut joists).

HU – 14 gauge

The HU series features uplift capacity and a large selection of sizes and load ranges. HU hangers have triangle holes that can be filled for increased loads. Web stiffeners required when used with joists.

MIU – 16 gauge

The MIU series features 16 gauge steel and extra nailing for higher loads.

LSSU, LSSUI – 18 gauge

LSSU210-2, LSSU410 and LSSUH310 – 16 gauge

LSU – 14 gauge

LSSU models provide uplift capacity and can be field sloped and/or skewed to 45°. Web stiffeners required when used with joists; cut web stiffener to match angle on sloped conditions.
Warranty

Product warranty

Products manufactured by Barrette Structural Inc. (hereafter: “Barrette Structural”) are guaranteed against manufacturing and material faults for the life of the structure.

This limited lifetime warranty is applicable if the products manufactured by Barrette Structural have been correctly stored, protected from climatic conditions such as sunlight, humidity, rain or wind, and installed in conformity with the guidelines and instructions supplied, either as floor joists or roof trusses, whichever is the case.

This warranty does not cover perceived problems of design or defects caused by:

- prolonged exposure to water or climatic conditions (in particular following construction work or due to construction delays), fire, flooding, natural disasters or any other cause beyond the control of Barrette Structural;
- faults in the structure following poor construction, installation or assembly practices;
- damage to the structure before, during or after installation;
- failure to respect installation instructions, current building code norms or generally accepted practices in the construction industry;
- the transformation of joists or roof trusses after their initial installation;
- the presence of mold, spore, rot or termites or any other element likely to degrade the installed product;
- the application of a preservative treatment or any other coating not approved by Barrette Structural;
- defective ventilation, repeated exposure to water or humid conditions;
- excessive loads or tension not allowed for by Barrette Structural or usage that does not comply with the type for which the product was designed.

In the case of problems with manufacturing faults covered by this warranty, Barrette Structural will pay reasonable costs for labor and materials to repair or replace only the joists or roof trusses under warranty. These costs must not exceed by more than three times the initial purchase cost of the joists or roof trusses involved in the claim.

In the event of a claim, the responsibility of Barrette Structural is limited to that which has been outlined in this warranty. Barrette Structural may not be held responsible for any other damage whatsoever.

All claims must be communicated to Barrette Structural within 30 days of the discovery of any anomaly or problem covered by this warranty, at the following address:

BARRETTE STRUCTURAL
555, rang Saint-Malo, Trois-Rivières (Québec) G8V 0A8 CANADA

To obtain further information, please contact your representative.
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