Canadian Edition

TRIFORCE®

Open Joist

Specifier Guide

Built by Barrette

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.

---

w w w . o p e n j o i s t t r i f o r c e . c o m
i n f o @ o j t r i f o r c e . c o m

Date Revised: March, 2014

TRIFORCE®
Peace of mind underfoot™

Open Joist | Specifier Guide

TRIFORCE®

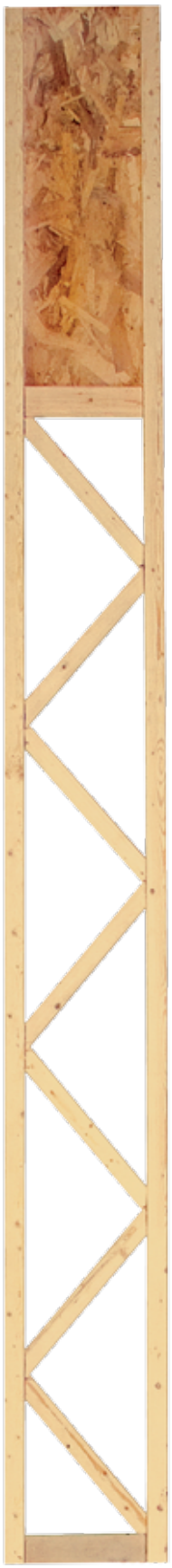
An unusual building

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 pi^2, 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.

Table of Contents



Evaluation Reports

Canada	CCMC-13474-R
United-States	ESR-2999
MEA 300-00-E	City of New-York
#434B	City of Houston
FL#5828	State of Florida

ICC EVALUATION SERVICE

Most Widely Accepted and Trusted

ICC-ES Evaluation Report **ESR-2999**

Reissued February 1, 2011

This report is subject to renewal in two years.

www.icc-es.org | (800) 423-6587 | (562) 699-0543 *A Subsidiary of the International Code Council®*

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 17 53—Shop-Fabricated Wood Trusses

REPORT HOLDER:

DISTRIBUTION OPEN JOIST 2000 INC.
555 ST-MALO
TROIS-RIVIERES, QUEBEC G8V 0A8
CANADA
(819) 374-6061
www.openjoist.com

EVALUATION SUBJECT:

CJ SERIES PREFABRICATED OPEN WEB JOISTS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2009 International Building Code® (IBC)
- 2009 International Residential Code® (IRC)

Property evaluated:

Structural

2.0 USES

The CJ Series prefabricated open web wood joists are used as uniformly loaded floor joists and roof joists in simple span and cantilever applications.

3.0 DESCRIPTION

3.1 General:

The CJ series prefabricated open web wood joists have solid-sawn lumber flanges connected by solid-sawn lumber vertical and diagonal web members forming diagonal webbed truss along the length, except at one end, which has a continuous oriented strand board (OSB) web to permit trimming to length in the field. The top and bottom flanges are parallel, creating a constant depth joist. The vertical and diagonal to flange connection is a proprietary glued finger joint, and the OSB end section connection is a proprietary glued tongue-and-groove joint to the flanges and to a vertical web transition post. Joist depths vary from 9.5 inches to 16 inches (241 mm to 406 mm). The joist has a top and bottom, with the bottom flange marked for proper orientation during joist placement. A vertical web member is always placed at the joist end opposite the OSB web end. See Table 1 and Figure 1 for descriptive information.

3.2 Material:

3.2.1 **Flanges:** The CJ series flange material is solid-sawn, spruce-pine-fir (SPF); finger-jointed lumber meeting the grade requirements listed in the approved quality control manual. Flange width, thickness and grade are specified in Table 1.

3.2.2 **Diagonal Webs:** The CJ series diagonal web material is SPF proprietary grade solid-sawn lumber meeting the requirements listed in the approved quality control manual. Diagonal web size and grade are specified in Table 1.

3.2.3 **Vertical Webs:** The CJ series end post and web post material is SPF proprietary grade solid-sawn lumber meeting the size and grade requirements listed in the approved quality control manual.

3.2.4 **OSB Webs:** The CJ series OSB web material is nominally ⅞ inch thick complying with DOC Voluntary Product Standard PS2 Exposure 1 and requirements listed in the approved quality control manual. The OSB web is continuous from the web post to the ends of the flanges. The OSB is oriented with face grain parallel to the joist flanges.

3.2.5 **Adhesive:** The adhesive used in the CJ series joist fabrication complies with ASTM D 2559, Section 5.3.3 of ASTM D 5055-08a and requirements listed in the approved quality control manual.

4.0 DESIGN AND INSTALLATION

4.1 General:

The design and installation of the CJ series prefabricated open web wood joists described in this report must comply with Sections 4.2 through 4.12 and the manufacturer's published installation instructions. Additionally, design of the CJ series joists is governed by the applicable code and corresponding editions of the *ANSI/AWC NDS-National Design Specification for Wood Construction* (NDS).

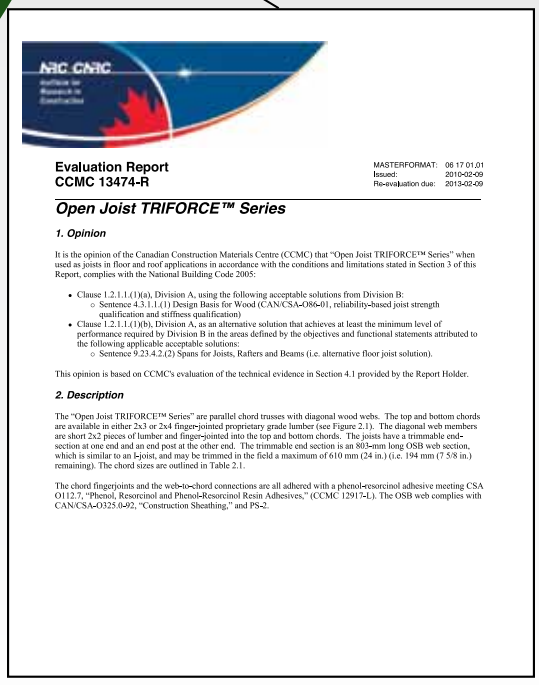
4.2 Allowable Capacity:

Table 2 specifies allowable moment, shear, joist bending stiffness (EI) and shear deflection coefficient (K). Reference design values given in Table 2 must be adjusted by applicable factors in accordance with Sections 4.2.1 through 4.2.5.

4.2.1 **Load Duration Factor, C_D:** Adjustments for duration of load apply to the reference design values in accordance with Section 7.3.2 of the NDS.

4.2.2 **Wet Service Factor, C_M:** CJ series joists must be installed in dry, covered conditions where the in-service moisture content of the joist is less than 16 percent. The wet service factor, C_M, for CJ series joists under these conditions is 1.0.

4.2.3 **Temperature Factor, C_t:** Where CJ series joists will be exposed to sustained in-service temperatures greater than 100°F (38°C), the reference design values must be adjusted by the temperature factor, C_t, in accordance with Section 7.3.4 of the NDS.



NRC CNRC

Evaluation Report
CCMC 13474-R

MASTERFORMAT: 06 17 01.01
Issued: 2010-02-09
Re-evaluation due: 2013-02-09

Open Joist TRIFORCE™ Series

1. Opinion

It is the opinion of the Canadian Construction Materials Centre (CCMC) that "Open Joist TRIFORCE™ Series" when used as joists in floor and roof applications in accordance with the conditions and limitations stated in Section 3 of this Report, complies with the National Building Code 2005:

- Clause 1.2.1.1.(1)(a), Division A, using the following acceptable solutions from Division B:
  - Sentence 4.3.1.1.(1) Design Basis for Wood (CAN/CSA-O86-01, reliability-based joist strength qualification and stiffness qualification)
- Clause 1.2.1.1.(1)(b), Division A, as an alternative solution that achieves at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the following applicable acceptable solutions:
  - Sentence 9.23.4.2.(2) Spans for Joists, Rafters and Beams (i.e. alternative floor joist solution).

This opinion is based on CCMC's evaluation of the technical evidence in Section 4.1 provided by the Report Holder.

2. Description

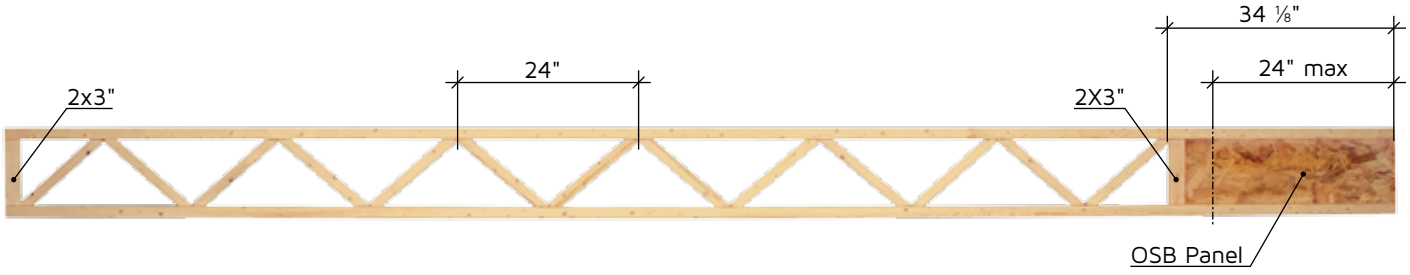
The "Open Joist TRIFORCE™ Series" are parallel chord trusses with diagonal wood webs. The top and bottom chords are available in either 2x3 or 2x4 finger-jointed proprietary grade lumber (see Figure 2.1). The diagonal web members are short 2x2 pieces of lumber and finger-jointed into the top and bottom chords. The joists have a trimmable end-section at one end and an end post at the other end. The trimmable end section is an 803-mm long OSB web section, which is similar to an I-joist, and may be trimmed in the field a maximum of 610 mm (24 in.) (i.e. 194 mm (7 5/8 in.) remaining). The chord sizes are outlined in Table 2.1.

The chord fingerjoints and the web-to-chord connections are all adhered with a phenol-resorcinol adhesive meeting CSA O112.7, "Phenol, Resorcinol and Phenol-Resorcinol Resin Adhesives," (CCMC 12917-L). The OSB web complies with CAN/CSA-O325.0-92, "Construction Sheathing," and PS-2.

Features and Benefits

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

Adjustment



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

Depths:
- 9 ½"
- 11 ⅞"
- 14"
- 16"

Flange:
- 2X3"
- 2X4"

Grades:
- 14 = 1.4E
- 15 = 1.5E
- 18 = 1.8E
- 20 = 2,0E

Design Values

Engineering properties of open joist TRIFORCE® Series products

Limits States Design (LSD)

Series	Depth	Flange Width	Mr	Vr	EI	K	Joist Weight
	Inches	Inches	(lbs-ft)	(lbs)	(lb/in^2)	(lbs)	plf
OJ-314	9.5	2.5	3 590	1 380	1,7000E+08	2,682E+06	2.70
	11.875	2.5	4 648	1 928	2,8457E+08	3,703E+06	2.80
	14	2.5	5 567	2 271	4,1219E+08	4,616E+06	2.85
	16	2.5	6 326	2 336	5,5397E+08	5,475E+06	2.95
OJ-315	9.5	2.5	4 386	1 380	1,8213E+08	2,682E+06	2.70
	11.875	2.5	5 679	1 928	3,0488E+08	3,703E+06	2.80
	14	2.5	6 835	2 271	4,4161E+08	4,616E+06	2.85
	16	2.5	7 923	2 336	5,9351E+08	5,475E+06	2.95
OJ-318	9.5	2.5	5 940	1 380	2,1857E+08	2,682E+06	2.73
	11.875	2.5	7 690	1 928	3,6588E+08	3,703E+06	2.83
	14	2.5	9 256	2 271	5,2996E+08	4,616E+06	2.88
	16	2.5	10 730	2 336	7,1224E+08	5,475E+06	2.98
OJ-320	9.5	2.5	6 116	1 380	2,4284E+08	2,682E+06	2.73
	11.875	2.5	7 919	1 928	4,0650E+08	3,703E+06	2.83
	14	2.5	9 532	2 271	5,8880E+08	4,616E+06	2.88
	16	2.5	11 049	2 336	7,9132E+08	5,475E+06	2.98
OJ-414	9.5	3.5	5 015	1 380	2,3800E+08	3,325E+06	3.23
	11.875	3.5	6 492	1 928	3,9840E+08	4,591E+06	3.33
	14	3.5	7 775	2 271	5,7707E+08	5,724E+06	3.43
	16	3.5	8 835	2 336	7,7555E+08	6,789E+06	3.53
OJ-415	11.875	3.5	7 963	1 928	4,2684E+08	4,591E+06	3.35
	14	3.5	9 585	2 271	6,1826E+08	5,724E+06	3.45
OJ-418	9.5	3.5	8 460	1 380	3,0599E+08	3,325E+06	3.25
	11.875	3.5	10 954	1 928	5,1223E+08	4,591E+06	3.35
	14	3.5	13 184	2 271	7,4195E+08	5,724E+06	3.45
	16	3.5	15 284	2 336	9,9714E+08	6,789E+06	3.55
OJ-420	9.5	3.5	8 595	1 380	3,3997E+08	3,325E+06	3.25
	11.875	3.5	11 128	1 928	5,6910E+08	4,591E+06	3.35
	14	3.5	13 393	2 271	8,2433E+08	5,724E+06	3.45
	16	3.5	15 526	2 336	1,1079E+09	6,789E+06	3.55

1) The factored moment resistances (with Φ included) listed are for standard term load duration and shall not be increased by any Code-allowed repetitive member system factor.
2) The factored shear resistances (with Φ included) for standard term load duration is the web tension resistance at the first web/bottom flange joint from the end bearing.
3) Mid-span deflection shall be predicted using the following formula:

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

Where:
L = Span
EI = Bending stiffness
K = Shear deflection factor
w = Uniform Load

End reaction properties of "Open Joist TRIFORCE® Series"

			Qr[1][2] (lbs)				
	Bearing End		2x3 Post End		OSB End Panel[3]		
	Flange		1.5"	3.5"	1.5"	1.5"	3.5"
	Web Stiffener[4]		N/A	N/A	No	Yes	No
OJ-300 OJ-400	Depth	9 ½"	2402	2999	1381	16773	1954
		11 ⅞"	2525	3170	1454	1764	2057
		14"	2635	3323	1715	1890	2173
		16"	2739	3467	1744	2133	2210

1) The end reaction resistances (with Φ included) are reference design values for standard term duration load.
2) End reactions require a minimum bearing length of 1.5 in; interpolation between bearing length is permitted.
3) The OSB section is adjustable up to 24 in without any modification of the tabulated limit states design properties.
4) Web stiffeners shall be installed in accordance with the product's installation details.

2x3 Block End

OSB End

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 ⅞", 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.

Depth	Series	Weight lbs/ft	Stock Lengths (feet)											
			8	10	12	14	16	18	20	22	24	26	28	30
9 ½	OJ314	2.70	✖	✖	✖	✖	✖							
	OJ418	3.25						✖						
11 ⅞	OJ314	2.80	✖	✖	✖	✖	✖							
	OJ315	2.80						✖						
	OJ415	3.35							✖					
	OJ418	3.35								✖				
14	OJ314	2.85	✖	✖	✖	✖	✖							
	OJ315	2.85						✖	✖					
	OJ415	3.45								✖				
	OJ418	3.45									✖	✖		
16	OJ314	2.95	✖	✖	✖	✖	✖							
	OJ315	2.95						✖	✖					
	OJ418	3.55								✖	✖	✖		
	OJ420	3.55											✖	✖

Maximum Allowed Floor Spans for residential application

Nailed & Glued Subfloor

9.5"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Floor span c/c				Maximum Floor span c/c			
8'-0"	OJ314	2x3	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
10'-0"			10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
12'-0"			12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
14'-0"			14'-0"	14'-0"	14'-0"	13'-6"	14'-0"	14'-0"	13'-6"	12'-1"
16'-0"			16'-0"	16'-0"	15'-0"	-----	16'-0"	14'-10"	-----	-----
18'-0"	OJ418	2x4	18'-0"	18'-0"	18'-0"	16'-10"	18'-0"	18'-0"	**17'-10"**	-----

11.875"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Floor span c/c				Maximum Floor span c/c			
8'-0"	OJ314	2x3	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
10'-0"			10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
12'-0"			12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
14'-0"			14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	13'-10"
16'-0"			16'-0"	16'-0"	16'-0"	15'-4"	16'-0"	16'-0"	15'-5"	-----
18'-0"	OJ315	2x3	18'-0"	18'-0"	18'-0"	16'-11"	18'-0"	18'-0"	17'-0"	-----
	OJ418 (S)	2x4	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	**17'-11"**
20'-0"	OJ415	2x4	20'-0"	20'-0"	20'-0"	**19'-1"**	20'-0"	20'-0"	**20'-0"**	-----
	OJ418 (S)	2x4	20'-0"	20'-0"	20'-0"	**20'-0"**	20'-0"	20'-0"	**20'-0"**	-----
22'-0"	OJ418	2x4	22'-0"	22'-0"	22'-0"	**20'-2"**	22'-0"	22'-0"	**21'-7"**	-----

14"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Floor span c/c				Maximum Floor span c/c			
8'-0"	OJ314	2x3	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
10'-0"			10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
12'-0"			12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
14'-0"			14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"
16'-0"			16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	15'-1"
18'-0"	OJ315	2x3	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	16'-8"
20'-0"	OJ315	2x3	20'-0"	20'-0"	20'-0"	18'-7"	20'-0"	20'-0"	18'-8"	-----
	OJ418 (S)	2x4	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	**19'-2"**
22'-0"	OJ415	2x4	22'-0"	22'-0"	22'-0"	**21'-8"**	22'-0"	22'-0"	**22'-0"**	-----
24'-0"	OJ418	2x4	24'-0"	24'-0"	24'-0"	**22'-11"**	24'-0"	24'-0"	**24'-0"**	-----
26'-0"			26'-0"	26'-0"	24'-10"	-----	26'-0"	26'-0"	**24'-0"**	-----

16"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Floor span c/c				Maximum Floor span c/c			
8'-0"	OJ314	2x3	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"	8'-0"
10'-0"			10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"	10'-0"
12'-0"			12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"
14'-0"			14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"	14'-0"
16'-0"	OJ314	2x3	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"
	OJ318 (S)	2x3	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"	16'-0"
18'-0"	OJ315	2x3	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	**18'-0"**
	OJ318 (S)	2x3	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	18'-0"	**18'-0"**
20'-0"	OJ315	2x3	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	**18'-0"**
	OJ418 (S)	2x4	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	20'-0"	**20'-0"**
22'-0"	OJ418	2x4	22'-0"	22'-0"	22'-0"	**22'-0"**	22'-0"	22'-0"	22'-0"	**21'-9"**
24'-0"			24'-0"	24'-0"	24'-0"	**24'-0"**	24'-0"	24'-0"	**24'-0"**	-----
26'-0"			26'-0"	26'-0"	26'-0"	**25'-5"**	26'-0"	26'-0"	**26'-0"**	-----
28'-0"	OJ420	2x4	28'-0"	28'-0"	**28'-0"**	**26'-3"**	28'-0"	**28'-0"**	**27'-2"**	-----
30'-0"			30'-0"	30'-0"	**28'-6"**	-----	30'-0"	**29'-8"**	-----	-----

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/360 and Total load deflection is limited to L/240.
5) Live Load is limited to L/360.
6) The spans shown are in accordance with NBCC and CAN/CSA O86 and take into consideration the performance criterion with continuous strongback installed at mid span.
7) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
8) The nailing specifications are to be in accordance with the National Building Code of Canada (NBCC) and the adhesives used should comply with CGSB standard CAN-CGSB 71.26-M88.
9) (S) = Special grade, verify availability

Maximum Allowed Unfactored Live Load Chart for residential application

Glued & Nailed Subfloor with Continuous Strongbacks without ceiling

9.5"			Unfactored Dead loads: 15 psf				Unfactored Dead loads: 30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Unfactored Live Load (psf)				Maximum Unfactored Live Load (psf)			
8'-0"	OJ314	2x3	**266**	**197**	**162**	**127**	**254**	**184**	**149**	**114**
10'-0"			**183**	**134**	**110**	**85**	**171**	**122**	**97**	**73**
12'-0"			121	89	72	55	110	76	59	42
14'-0"			80	60	49	-----	74	49	-----	-----
16'-0"			55	41	-----	-----	50	-----	-----	-----
18'-0"	OJ418	2x4	68	51	43	-----	68	51	-----	-----

11.875"			Unfactored Dead loads: 15 psf				Unfactored Dead loads: 30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Unfactored Live Load (psf)				Maximum Unfactored Live Load (psf)			
8'-0"	OJ314	2x3	**281**	**207**	**171**	**134**	**268**	**195**	**158**	**121**
10'-0"			**222**	**163**	**134**	**105**	**210**	**151**	**121**	**92**
12'-0"			**163**	**119**	**97**	**75**	**150**	**106**	**84**	**62**
14'-0"			116	84	67	51	103	71	55	-----
16'-0"			85	61	48	-----	73	48	-----	-----
18'-0"	OJ315	2x3	69	52	43	-----	69	46	-----	-----
	OJ418 (S)	2x4	95	**84**	**69**	**52**	**105**	**72**	**56**	**40**
20'-0"	OJ415	2x4	71	53	44	-----	71	**53**	**42**	-----
	OJ418 (S)	2x4	84	**63**	**52**	**42**	**84**	**63**	**48**	-----
22'-0"	OJ418	2x4	64	48	40	-----	**64**	**48**	-----	-----

14"			Unfactored Dead loads: 15 psf				Unfactored Dead loads: 30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Unfactored Live Load (psf)				Maximum Unfactored Live Load (psf)			
8'-0"	OJ314	2x3	**302**	**223**	**184**	**144**	**289**	**211**	**171**	**132**
10'-0"			**239**	**176**	**144**	**113**	**226**	**163**	**132**	**101**
12'-0"			**197**	**144**	**118**	**92**	**184**	**132**	**106**	**79**
14'-0"			141	103	83	64	129	90	71	52
16'-0"			105	75	61	46	92	63	48	-----
18'-0"	OJ315	2x3	98	73	58	44	89	60	46	-----
20'-0"	OJ315	2x3	73	55	45	-----	67	44	-----	-----
	OJ418 (S)	2x4	**113**	**82**	**66**	**50**	89	**69**	**53**	-----
22'-0"	OJ415	2x4	78	58	48	-----	78	**55**	**41**	-----
24'-0"	OJ418	2x4	72	54	45	-----	**72**	**53**	**40**	-----
26'-0"			57	43	-----	-----	57	**41**	-----	-----

16"			Unfactored Dead loads: 15 psf				Unfactored Dead loads: 30 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Maximum Unfactored Live Load (psf)				Maximum Unfactored Live Load (psf)			
8'-0"	OJ314	2x3	**342**	**254**	**209**	**165**	**330**	**241**	**197**	**152**
10'-0"			**271**	**200**	**165**	**129**	**259**	**188**	**152**	**117**
12'-0"			**224**	**165**	**135**	**105**	**211**	**152**	**123**	**93**
14'-0"			**162**	**118**	**97**	**75**	**150**	**106**	**84**	**62**
16'-0"	OJ314	2x3	121	87	71	54	108	75	58	41
	OJ318 (S)	2x3	**165**	**120**	**98**	**76**	**152**	**108**	**86**	**63**
18'-0"	OJ315	2x3	**119**	**86**	**70**	**53**	**107**	**74**	**57**	**41**
	OJ318 (S)	2x3	**145**	**106**	**86**	**66**	**133**	**93**	**73**	**54**
20'-0"	OJ315	2x3	94	67	54	40	81	55	41	-----
	OJ418 (S)	2x4	**129**	**94**	**76**	**58**	**117**	**81**	**63**	**46**
22'-0"	OJ418	2x4	**116**	**84**	**68**	**52**	**104**	**71**	**55**	-----
24'-0"			**95**	**71**	**59**	**46**	**93**	**63**	**49**	-----
26'-0"			76	**57**	**47**	-----	**76**	**57**	**43**	-----
28'-0"	OJ420	2x4	68	**51**	**42**	-----	**68**	**51**	-----	-----
30'-0"			56	42	-----	-----	**56**	-----	-----	-----

Notes :

1) Uniform loads shown are on centerline to centerline and considering a minimum end bearing length of 1½", higher loads could be applied using longer end bearing length.
2) Minimum end bearing length is 1½", **except for bold spans, minimum 1½" with web stiffeners at the OSB section.**
3) Dead load deflection is limited to L/360 and Total load deflection is limited to L/240.
4) Live Load is limited to L/360.
5) The loads shown are in accordance with NBCC, part 9 and CAN/CSA O86 and take into consideration the performance criterion as per NBCC section 9.23.4.2(2) with continuous strongback installed at mid span.
6) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
7) The nailing specifications are to be in accordance with the National Building Code of Canada (NBCC) and the adhesives used should comply with CGSB standard CAN-CGSB 71.26-M88.
8) (S) = Special grade, verify availability

Strongback Recommendation Chart

Mid Span Continuous Strongbacks Recommendation For Maximum Span Charts

9.5"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf				LL=40 psf DL=36 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Strongbacks				Strongbacks				Strongbacks			
8'-0"	OJ314	2x3	None	None	None	None	None	None	None	None	None	None	None	None
10'-0"			None	None	None	None	None	None	None	None	None	None	None	None
12'-0"			None	None	None	None	None	None	None	None	None	None	None	None
14'-0"			None	None	1-2x4	1-2x4	None	None	None	None	None	None	None	-----
16'-0"			1-2x4	1-2x6	1-2x6	-----	1-2x4	1-2x6	-----	-----	1-2x4	1-2x4	-----	-----
18'-0"	OJ418	2x4	1-2x4	1-2x6	1-2x6	1-2x6	1-2x4	1-2x6	2-2x6	-----	1-2x4	1-2x6	2-2x6	-----

11.875"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf				LL=40 psf DL=36 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Strongbacks				Strongbacks				Strongbacks			
8'-0"	OJ314	2x3	None	None	None	None	None	None	None	None	None	None	None	None
10'-0"			None	None	None	None	None	None	None	None	None	None	None	None
12'-0"			None	None	None	None	None	None	None	None	None	None	None	None
14'-0"			None	None	None	None	None	None	None	None	None	None	None	None
16'-0"			None	1-2x4	1-2x4	1-2x4	None	1-2x4	1-2x4	-----	None	1-2x4	None	-----
18'-0"	OJ315	2x3	1-2x4	1-2x6	1-2x6	1-2x6	1-2x4	1-2x6	1-2x6	-----	1-2x4	1-2x6	1-2x4	-----
	OJ418 (S)	2x4	None	1-2x4	1-2x4	1-2x6	None	1-2x4	1-2x4	2-2x4	None	1-2x4	1-2x4	1-2x4
20'-0"	OJ415	2x4	2-2x4	1-2x6	2-2x6	2-2x6	2-2x4	1-2x6	2-2x6	-----	2-2x4	1-2x6	2-2x6	-----
	OJ418 (S)	2x4	1-2x4	1-2x6	1-2x6	2-2x6	1-2x4	2-2x4	1-2x6	-----	1-2x4	1-2x6	1-2x6	-----
22'-0"	OJ418	2x4	1-2x6	2-2x6	1-2x8	1-2x8	1-2x6	2-2x6	1-2x8	-----	1-2x6	2-2x6	1-2x8	-----

14"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf				LL=40 psf DL=36 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Strongbacks				Strongbacks				Strongbacks			
8'-0"	OJ314	2x3	None	None	None	None	None	None	None	None	None	None	None	None
10'-0"			None	None	None	None	None	None	None	None	None	None	None	None
12'-0"			None	None	None	None	None	None	None	None	None	None	None	None
14'-0"			None	None	None	None	None	None	None	None	None	None	None	None
16'-0"			None	None	None	None	None	None	None	None	None	None	None	None
18'-0"	OJ315	2x3	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	None
20'-0"	OJ315	2x3	1-2x6	1-2x6	2-2x6	1-2x6	1-2x6	1-2x6	1-2x6	-----	1-2x6	1-2x6	1-2x6	-----
	OJ418 (S)	2x4	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	-----
22'-0"	OJ415	2x4	1-2x6	1-2x6	2-2x6	1-2x8	1-2x6	1-2x6	2-2x6	-----	1-2x6	1-2x6	1-2x6	-----
24'-0"	OJ418	2x4	1-2x6	2-2x6	2-2x8	1-2x8	1-2x6	2-2x6	2-2x8	-----	1-2x6	2-2x6	2-2x6	-----
26'-0"			1-2x8	2-2x8	2-2x8	-----	1-2x8	2-2x8	2-2x8	-----	1-2x8	1-2x8	-----	-----

16"			LL=40 psf DL=15 psf				LL=40 psf DL=30 psf				LL=40 psf DL=36 psf			
Spacing o.c.			12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
Subfloor thickness - CSP			5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"	5/8"	5/8"	5/8"	3/4"
Length	Series		Strongbacks				Strongbacks				Strongbacks			
8'-0"	OJ314	2x3	None	None	None	None	None	None	None	None	None	None	None	None
10'-0"			None	None	None	None	None	None	None	None	None	None	None	None
12'-0"			None	None	None	None	None	None	None	None	None	None	None	None
14'-0"			None	None	None	None	None	None	None	None	None	None	None	None
16'-0"	OJ314	2x3	None	None	None	None	None	None	None	None	None	None	None	None
	OJ318 (S)	2x3	None	None	None	None	None	None	None	None	None	None	None	None
18'-0"	OJ315	2x3	None	None	1-2x6	1-2x6	None	None	1-2x6	1-2x6	None	None	1-2x6	1-2x6
	OJ318 (S)	2x3	None	None	None	None	None	None	None	None	None	None	None	None
20'-0"	OJ315	2x3	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	-----
	OJ418 (S)	2x4	None	None	None	1-2x6	None	None	None	1-2x6	None	None	None	1-2x6
22'-0"	OJ418	2x4	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	1-2x6	None	1-2x6	1-2x6	1-2x6
24'-0"			1-2x6	1-2x6	2-2x6	2-2x6	1-2x6	1-2x6	2-2x6	-----	1-2x6	1-2x6	2-2x6	-----
26'-0"			1-2x6	2-2x6	1-2x8	2-2x8	1-2x6	2-2x6	1-2x8	-----	1-2x6	2-2x6	2-2x6	-----
28'-0"	OJ420	2x4	2-2x6	2-2x8	1-2x10	2-2x8	2-2x6	2-2x8	2-2x8	-----	2-2x6	2-2x8	-----	-----
30'-0"			2-2x8	2-2x10	2-2x10	-----	2-2x8	2-2x10	-----	-----	2-2x8	2-2x10	-----	-----

Notes :

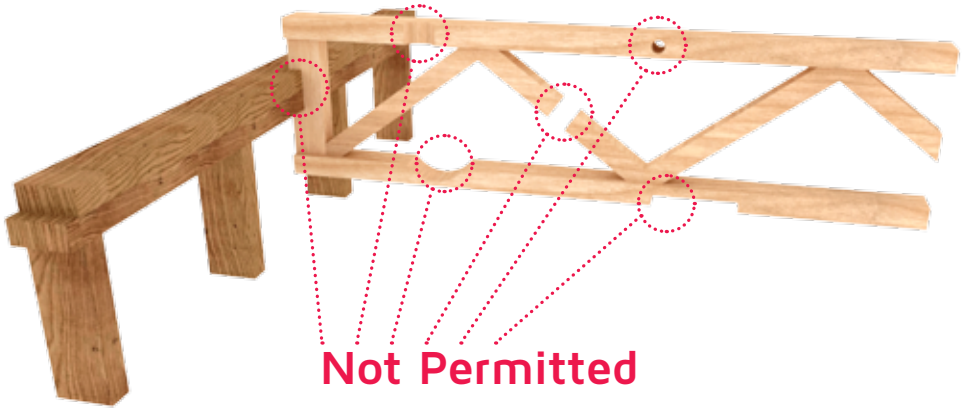
1) Specified continuous strongbacks installed at mid span shown, take into consideration the performance criterion of the NBCC
2) Refer to appropriate sections of the Specifier Guide for installation guidelines and construction details.
3) Live load deflection is limited to L/480
4) This table of continuous strongback for maximum spans can also be used for Maximum spans when live load deflection is limited to L/360 **except with 40-36 loading, strongbacks are limited to L/480**.
5) (S) = Special grade, verify availability

Installation

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 ½" 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 23). 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 ½".
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 ½ 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 Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems. Follow manufacturer guidelines for field-glued floors.

Not Permitted

Joist flanges shall not be notched, cut or drilled to allow piping



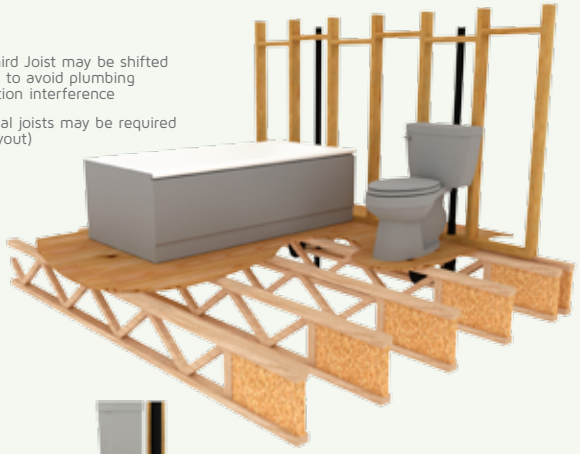
All information in this document is general and is given as general information to an informed tradesman, that must have all the proper qualifications and knowledge for installing floor joists properly as per manufacturers specifications and as per local code.

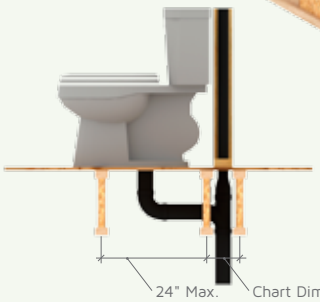
The warranty shall not extend to products misused, neglected, subjected to abnormal storage, use or exposure or which have been altered in any manner or not maintained in accordance with published instructions. The products must be handled and installed in accordance with the manufacturer's published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

JOIST SPACING BELOW PLUMBING WALL PARALLEL TO WALL

Every third Joist may be shifted up to 3" to avoid plumbing penetration interference

Additional joists may be required (See Layout)



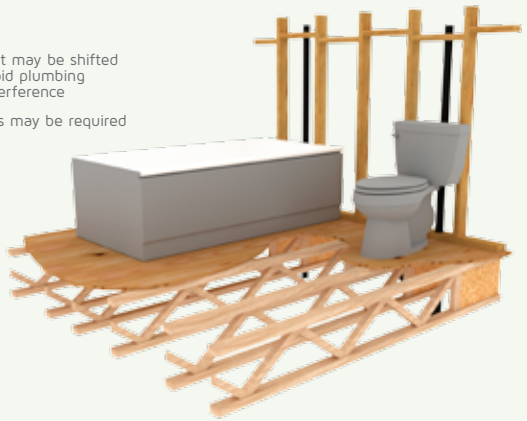


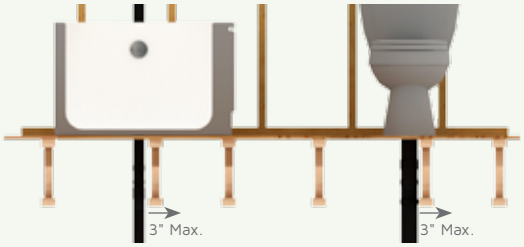
Joist Spacing		
Joist Chord Width	2x4 Wall	2x6 Wall
2X3 Chord	6"	8"
2X4 Chord	7"	9"

JOIST SPACING BELOW PLUMBING WALL PERPENDICULAR TO WALL

Every third Joist may be shifted up to 3" to avoid plumbing penetration interference

Additional joists may be required (See Layout)

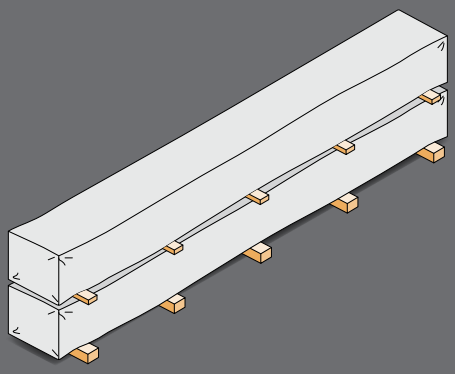


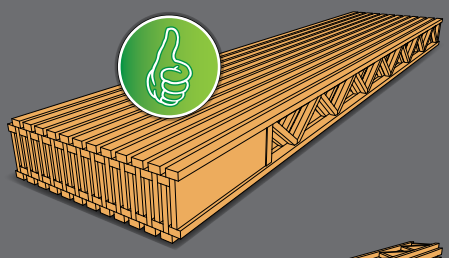


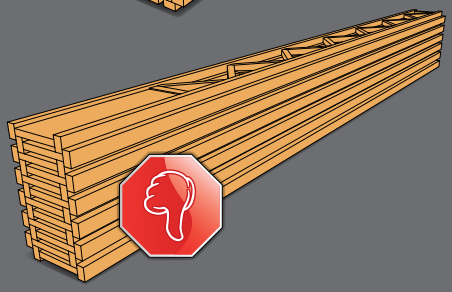
Storage & Handling

Storage Notes:

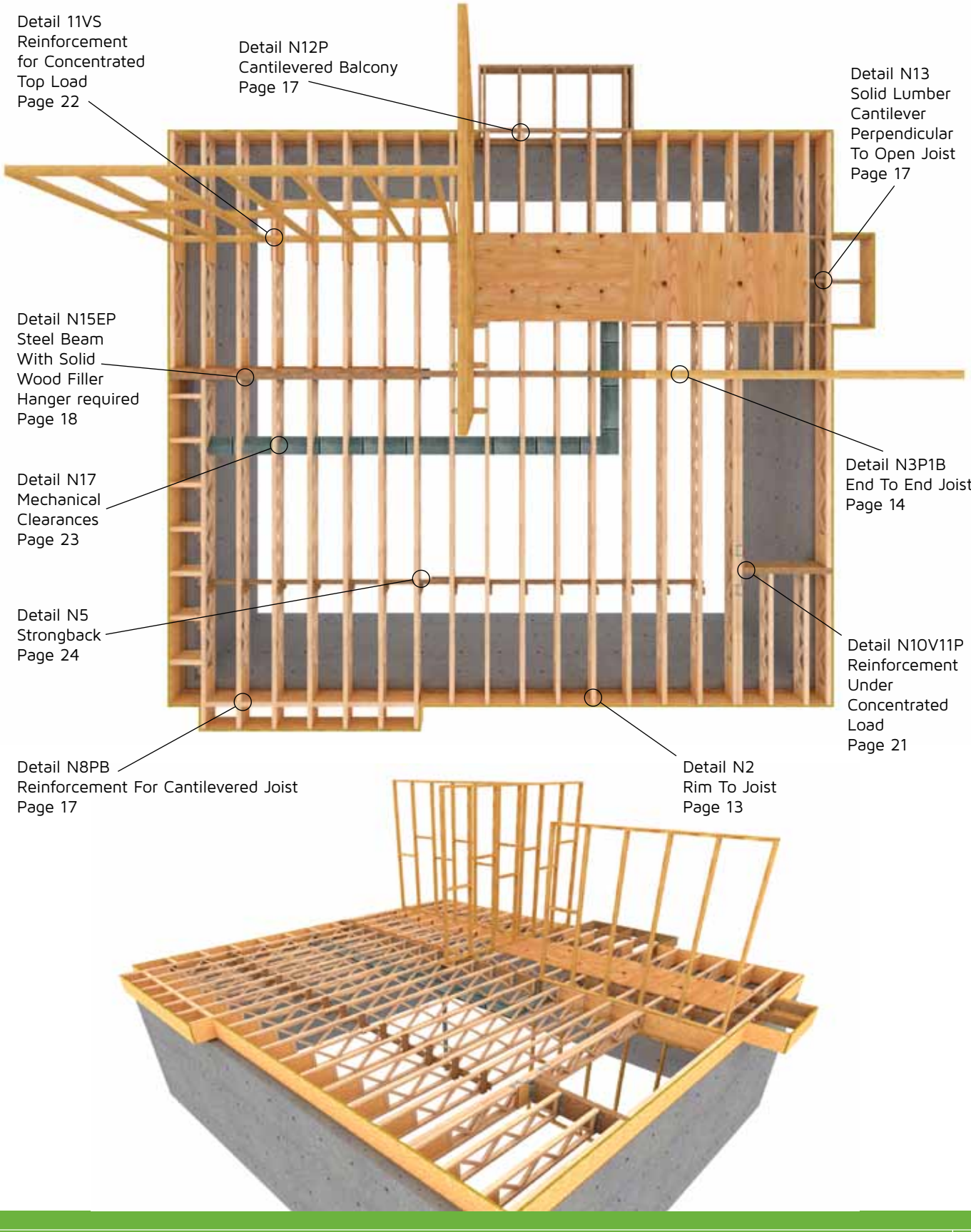
1. Keep **TRIFORCE®** bundles wrapped to protect from weather
2. Use wood stickers to separate bundles under each automatically inserted stickers.
3. Always store, stack and handle **TRIFORCE®** vertically and level – never flat/ horizontal.
4. Do not store **TRIFORCE®** in direct contact with the ground.
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.







Typical Details



Rim Board Connection

Standard Sizes For Performance Rated Rim Boards

Thickness (inches): 1 ⅛ .
Depth (inches): 9 ½, 11 ⅞, 14, 16.
Length (feet): 8 to 16

Limit States Design Values[a] For Engineered Wood Rim Boards

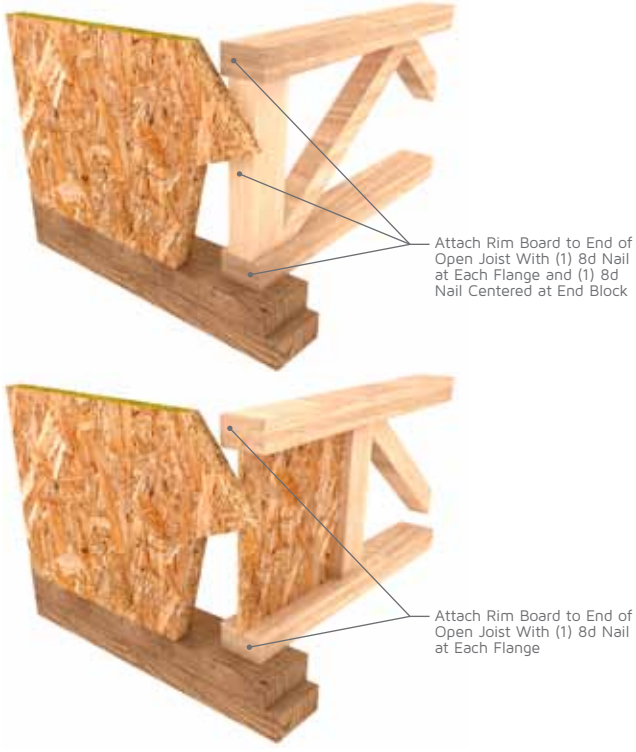
Rim Board Grade	Performance Category[b]	H[c] (lbf/ft)	V[d] (lbf/ft)		Z[e] (lbf)	P[f] (lbf)
		Depth[d] Limitation (in.)				
		d ≤ 24	d ≤ 16	16 < d ≤ 24	d ≤ 24	16 < d ≤ 24
B2	1-1/8 or higher	261	8,090	5,338	584	5,838
C1	1-1/8 or higher	235	7,739	5,004	584	5,838

For SI: 1 in. = 25.4 mm, 1 lbf/ft = 0.0146 N/mm, 1 lbf = 4.448 N
(a) These design values are applicable to standard-term load duration and permitted to be adjusted for other load durations in accordance with the applicable building code.
(b) The performance categories for these rim boards refers to the minimum thickness of the rim board.
(c) H = The factored horizontal (shear) load transfer resistance based on the attachment schedule specified in this standard. This capacity represents the total of the lateral loads transferred through the rim board by both the floor sheathing and wall plate above the floor sheathing.
(d) V = The factored uniform vertical (compression) load resistance.
(e) Z = The factored lateral resistance of a 1/2-inch diameter lag screw in compliance with the connection requirements tested in this standard.
(f) P = The factored concentrated vertical load resistance based on a 4 ½ inch bearing length.

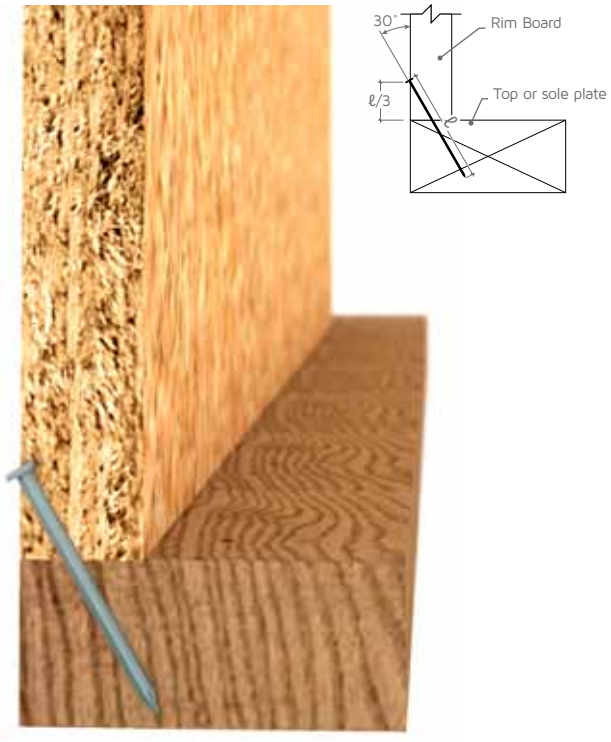
A Structural Rim Board is recommended when the open joist **TRIFORCE**® Floor Joists are installed perpendicular or parallel on exterior bearing walls.

It is not recommended to use open joist **TRIFORCE**® Floor Joists as solo starter joists on exterior bearing walls.

Rim to Joist

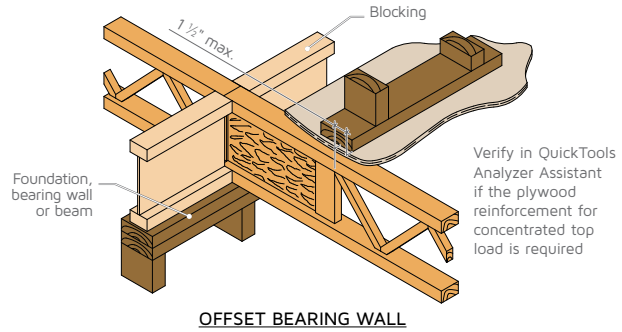


Toe-Nail Connection At Rim Board



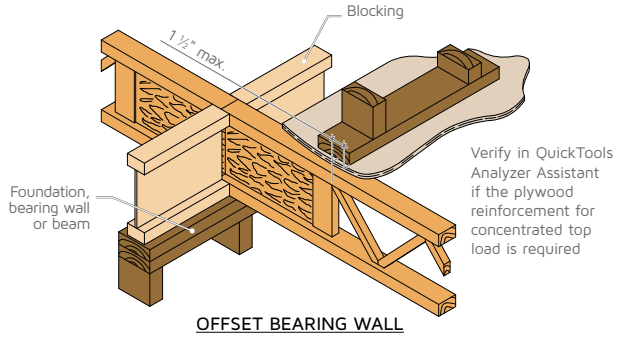
Interior Bearing Wall Blocking

Detail N3EP1M



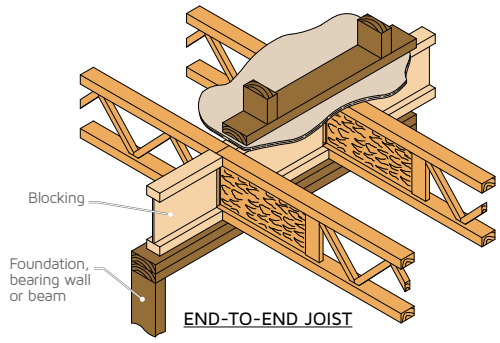
OFFSET BEARING WALL

Detail N3EP2M



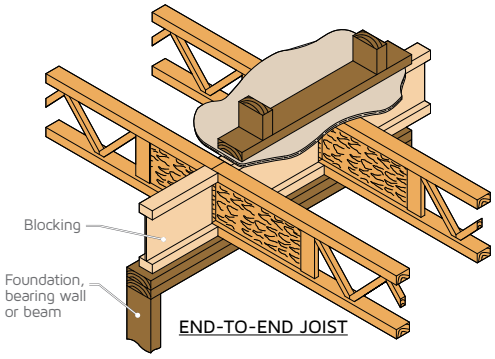
OFFSET BEARING WALL

Detail N3P1B



END-TO-END JOIST

Detail N3P2B



END-TO-END JOIST

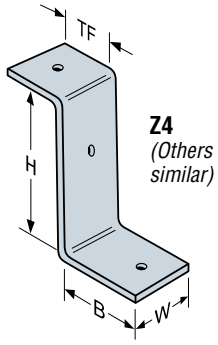
Parallel Non-Load Bearing Wall Support

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.

Model No.	Ga	Dimensions (in)				Fasteners[1] (Total)	Factored Resistance (K_D = 1.00)	
		W	H	B	TF		D.Fir-L	S-P-F
							lbs	lbs
							kN	kN
Z2	20	2 5/16	1 ½	1 ⅜	1 ⅜	4-10dx1 ½	740	525
							3.29	2.34
Z4	12	1 ½	3 ½	2 ⅛	1 ¾	2-16d	765	545
							3.40	2.42
Z6	12	1 ½	5 ⅜	2	1 ⅜	2-16d	790	560
							3.51	2.49
Z28	28	2 5/16	1 ½	1 ⅜	1 ⅜	10dx1 ½	—	—
							—	—
Z38	28	2 5/16	2 ½	1 ⅜	1 ⅜	10dx1 ½	—	—
							—	—
Z44	12	2 ½	3 ½	2	1 ⅜	4-16d	1420	1010
							6.32	4.49

1) Z28 and Z38 do not have nail holes. Fastener quantity and type shall be per Designer.
2) Z4 and Z6 resistances apply with a nail into the top and a nail into the seat.
3) Factored resistances for Z clips cannot be increased for short term loading.
4) NAILS: 16d = 0.162" dia. x 3 1/2" long, 10dx1 1/2 = 0.148" dia. x 1 1/2" long.

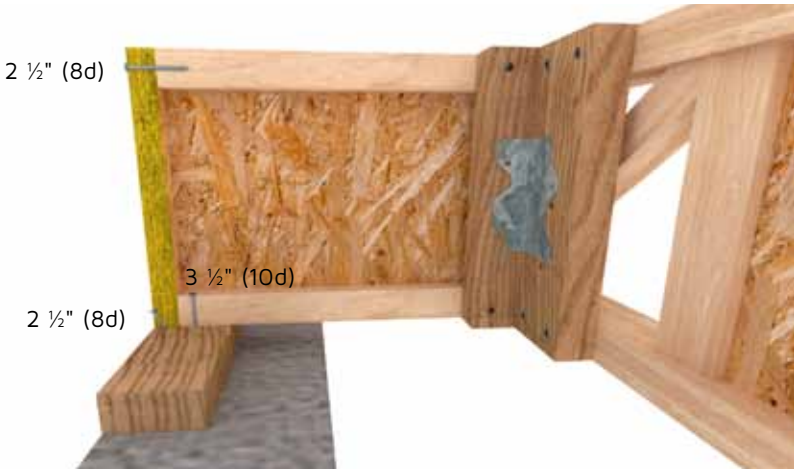


Z4
(Others similar)

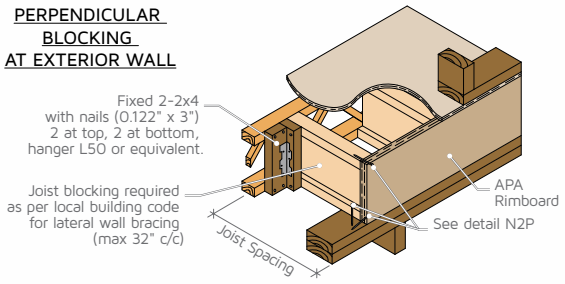
Perpendicular Blocking

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.

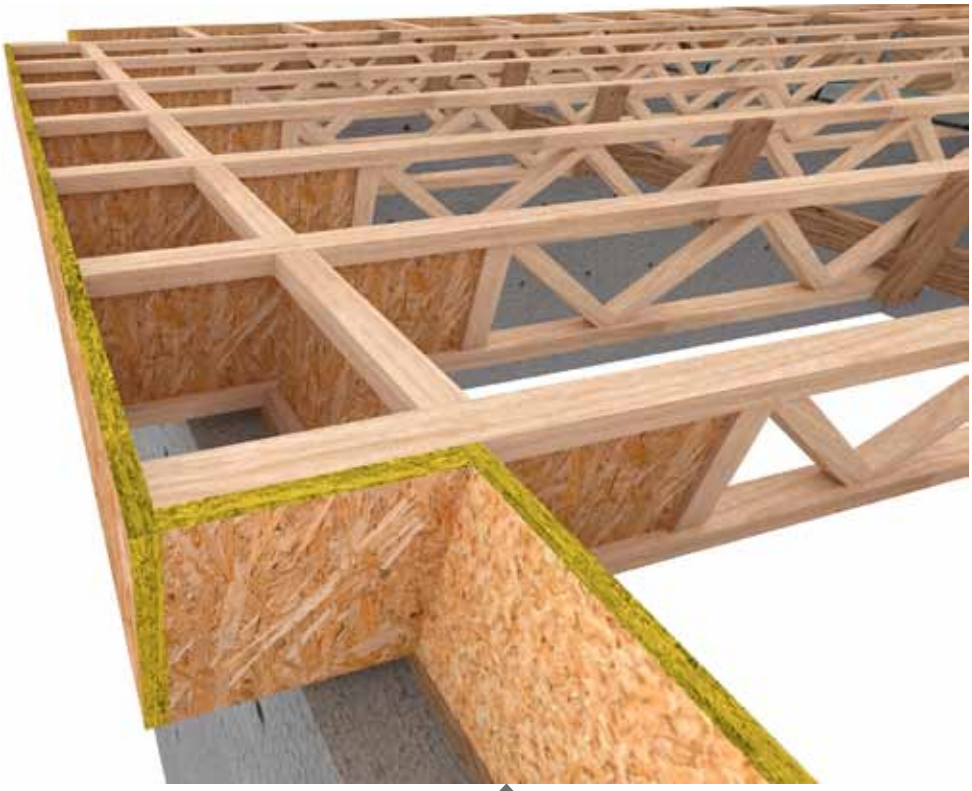


Detail N6R1B

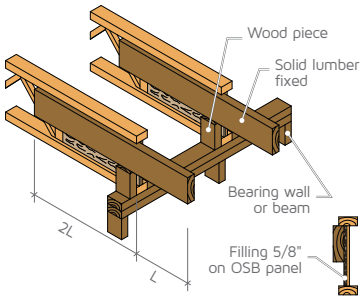


Cantilevers

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.

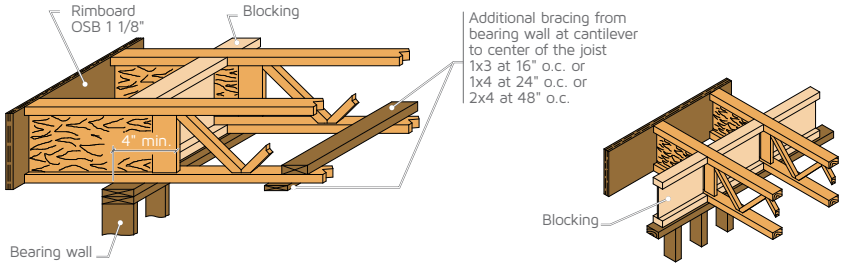


Detail N12P



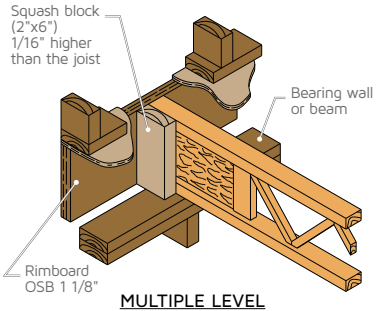
CANTILEVERED BALCONY

Detail N8PB



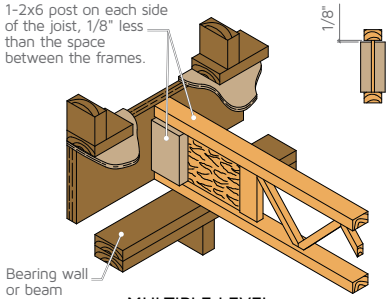
REINFORCEMENT FOR CANTILEVERED JOIST

Detail N2B



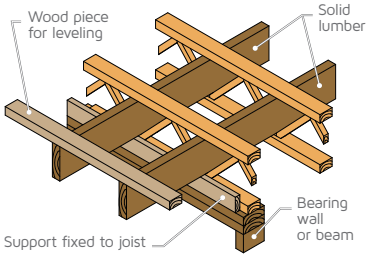
MULTIPLE LEVEL
BRICK AT LOWER LEVEL

Detail N2BP



MULTIPLE LEVEL
BRICK AT LOWER LEVEL

Detail 13

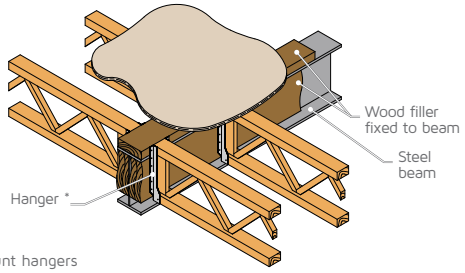


SOLID LUMBER
CANTILEVER PERPENDICULAR
TO OPEN JOIST

Steel Beam Connections With Hangers

Detail N15P1

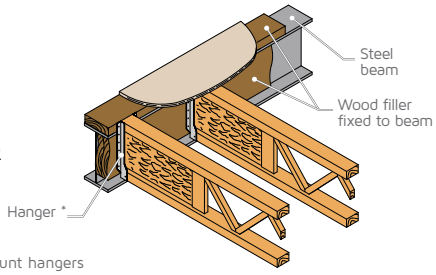
STEEL BEAM WITH SOLID WOOD FILLER HANGER REQUIRED



* top mount or face mount hangers

Detail N15EP

STEEL BEAM WITH SOLID WOOD FILLER HANGER REQUIRED

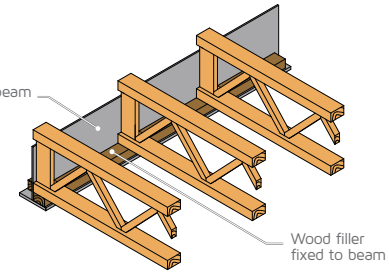


* top mount or face mount hangers

Steel Beam Connections Without Hangers

Detail 14T

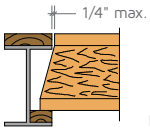
STEEL BEAM BOTTOM FLANGE BEARING HANGER NOT REQUIRED

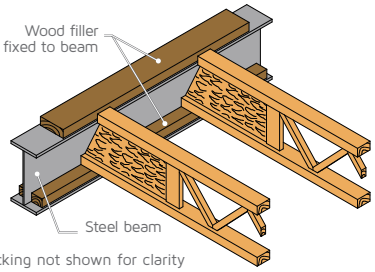


Blocking not shown for clarity

Detail N14P

STEEL BEAM BOTTOM FLANGE BEARING HANGER NOT REQUIRED

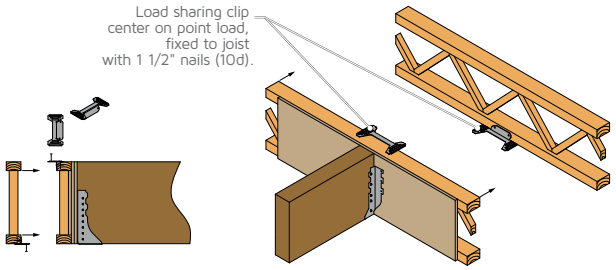




Blocking not shown for clarity

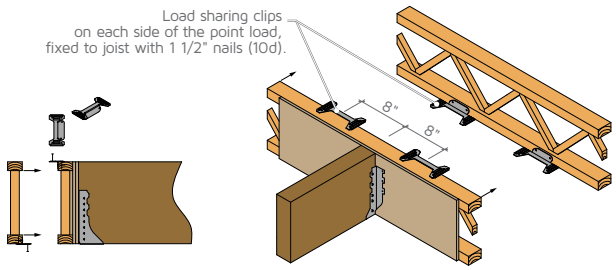
Multiple Joist Connectors (MJC) for Concentrated Side Load

Detail MJC2



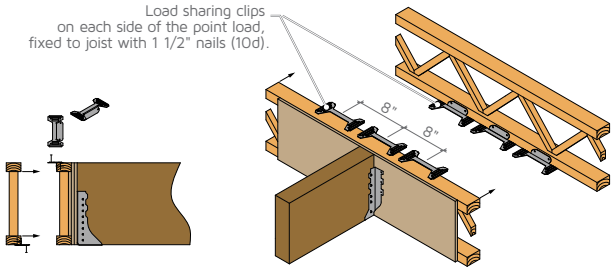
DOUBLE JOIST LOAD TRANSFER

Detail MJC4



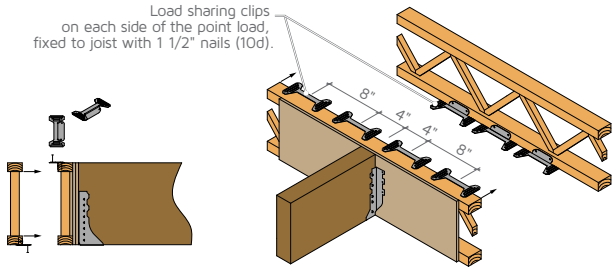
DOUBLE JOIST LOAD TRANSFER

Detail MJC6



DOUBLE JOIST LOAD TRANSFER

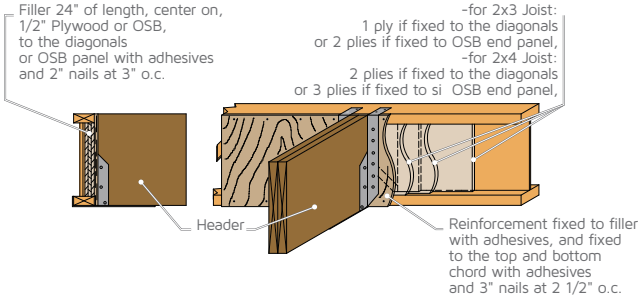
Detail MJC8



DOUBLE JOIST LOAD TRANSFER

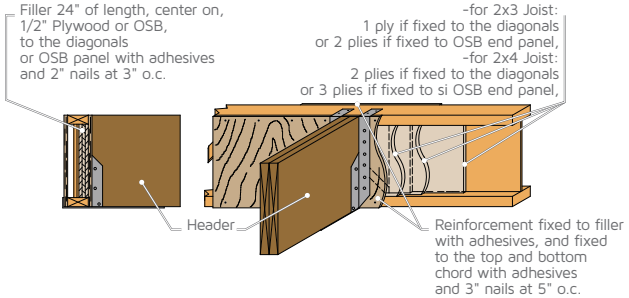
Reinforcement for Concentrated Side Load

Detail N10V11P



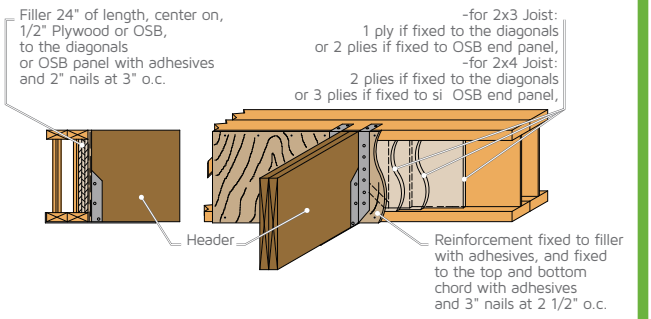
ONE SIDE REINFORCEMENT
SINGLE JOIST

Detail N10V12P



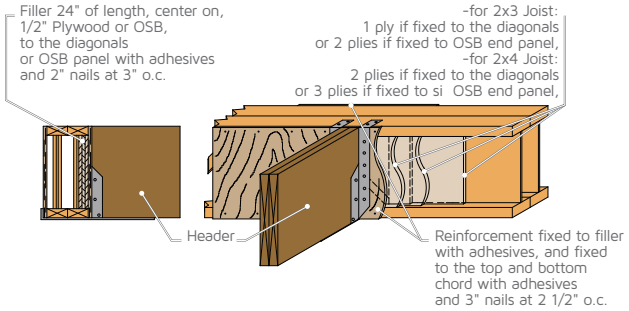
TWO SIDES REINFORCEMENT
SINGLE JOIST

Detail N10V21P



ONE SIDE REINFORCEMENT
DOUBLE JOISTS

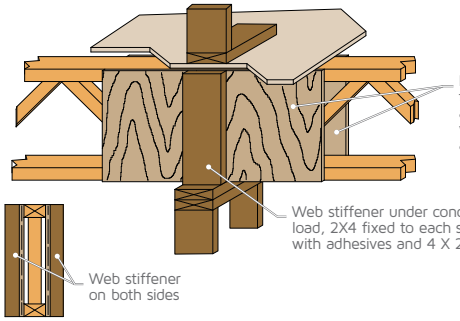
Detail N10V22P



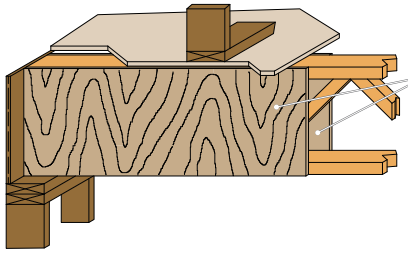
TWO SIDES REINFORCEMENT
DOUBLE JOISTS

Reinforcement for Concentrated Top Load

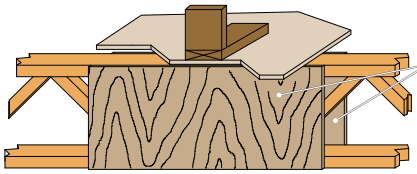
Detail N11VS4



Detail N11V



Detail N11VS



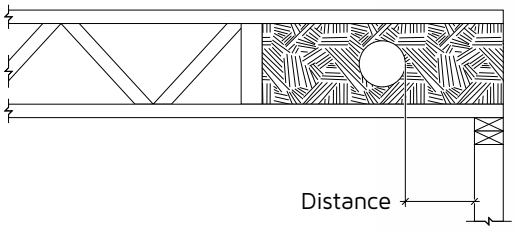
Allowable OSB Panel End Hole Penetrations

Holes sizes and locations - Simple span

Joist Depth	Joist Series	Round hole diameter only (in)											
		Minimum distance from inside face of support to beginning of hole (ft-in)											
		2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	Max Span
9.5"	OJ314	0' 5"	0' 5"	0' 5"	1' 6"								16' 0"
	OJ418	0' 5"	0' 6"	2' 0"									20' 0"
11.875"	OJ314	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	1' 2"						16' 0"
	OJ315	0' 6"	0' 6"	0' 6"	0' 6"	1' 0"	2' 0"						18' 0"
	OJ415	0' 6"	0' 6"	0' 6"	1' 0"	2' 0"							20' 0"
	OJ418	0' 6"	0' 6"	1' 0"	2' 0"								22' 0"
14"	OJ314	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 9"	1' 10"			16' 0"
	OJ315	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	1' 6"					20' 0"
	OJ415	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	1' 6"	2' 0"					22' 0"
	OJ418	0' 6"	0' 6"	0' 9"	1' 6"	2' 2"							26' 0"
16"	OJ314	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 9"	1' 6"	16' 0"
	OJ315	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	1' 0"	1' 8"		20' 0"
	OJ318	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	1' 0"	1' 8"		**18' 0"**
	OJ418	0' 6"	0' 6"	0' 6"	0' 6"	0' 6"	1' 0"	2' 0"					26' 0"
	OJ420	0' 6"	0' 6"	0' 9"	1' 6"	2' 0"							30' 0"

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. For other applications contact your **TRIFORCE®** representative.
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

Mechanical Opening Dimension			
Depth	Round	Square	Rectangular
9½"	5"	4" x 6"	3" x 9"
11⅞"	7¼"	5¾" x 5¾"	3" x 13"
14"	8½"	6½" x 6½"	3" x 14", 6" X 8"
16"	9½"	7½" x 7½"	3" x 15"

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.

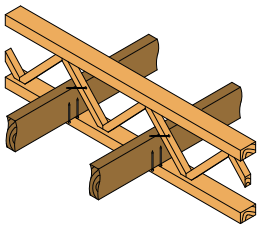
Strongback can be cut between 2 joists for ducts, pipes and wires if needed, but at least 3 consecutive joists must remain attached together.

9 ½" = 2x4
11 ⅞" = 2x4
14" = 2x4 or 2x6
16" = 2x6 or 2x8

Detail N5

Strongback (at mid span)

Option #1

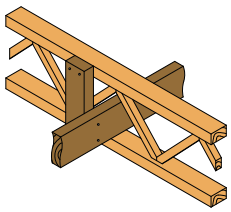


2x3 flanges: 1 - 3" (10d) through bottom flange and 1 - 3" (10d) through the diagonal, adding adhesive will insure long term performance

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.

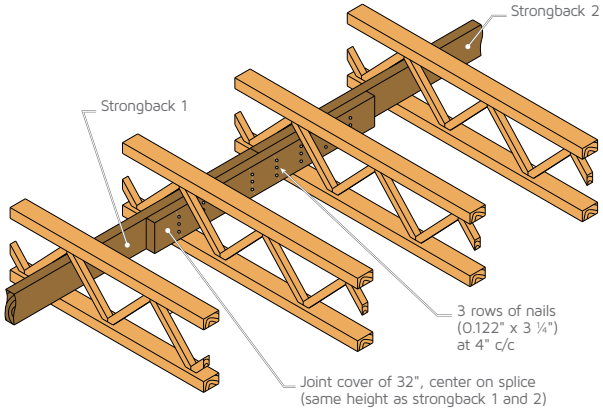
Option #2 (suggested)



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



TRIFORCE® Floor Performance

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.

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.

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

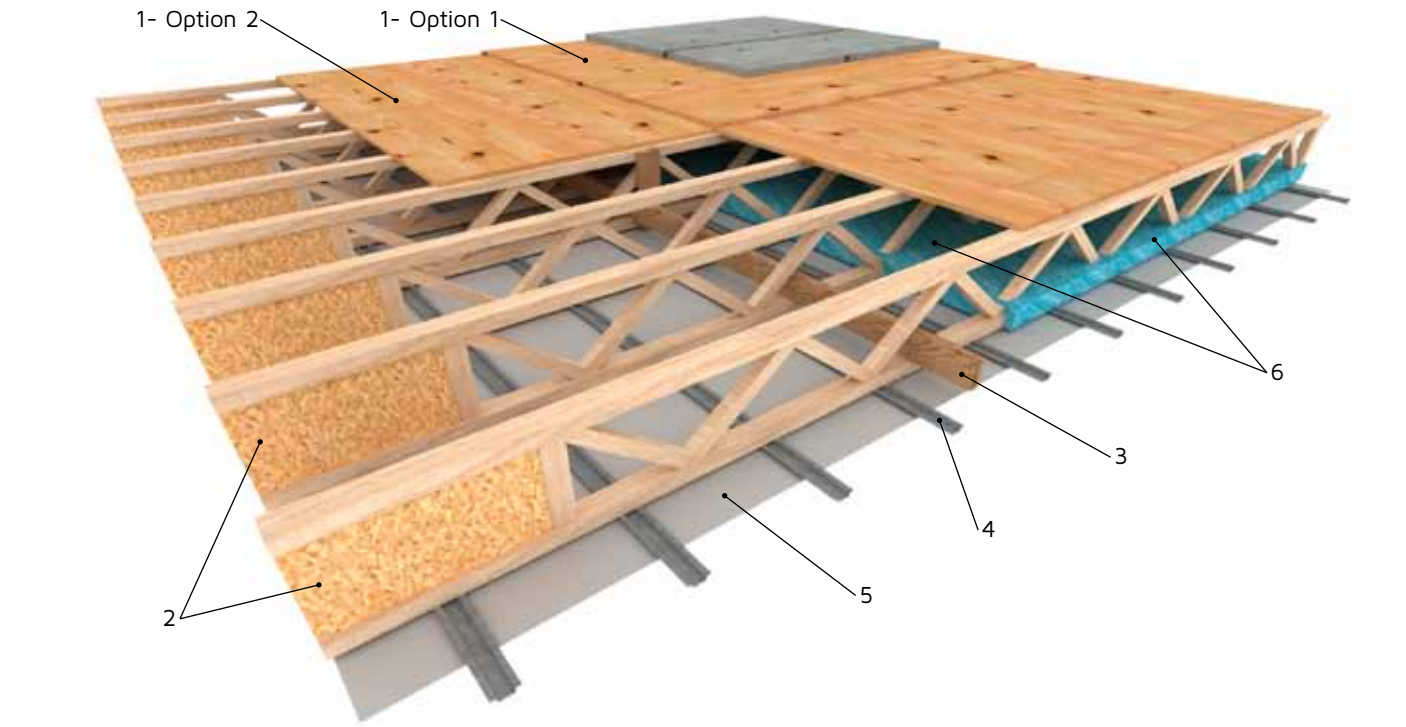
Again today with the introduction of the new generation of OpenJoist products – **TRIFORCE®**, our product has demonstrated outstanding fire performance. Both OpenJoist products carry a 1 hour rating with 1 layer of ⅝ gypsum board Type C for all flange sizes and depths. We are one of the few that still 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 ⅝ type X

1-Hour Fire Resistance Rated Floor Assembly

Floor/Ceiling – 100% Design Load – 1 Hour Rating – 1 Layer Gypsum



1- Sub floor :

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 around the perimeter and 12-inches on center in the field.

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 3) 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 **TRIFORCE®** 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 design and available on NRC website can help you out in finding the proper performance for your need.

http://www.nrc-cnrc.gc.ca/eng/ibp/irc/software.html

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 assess noise generate 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 footstep

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?

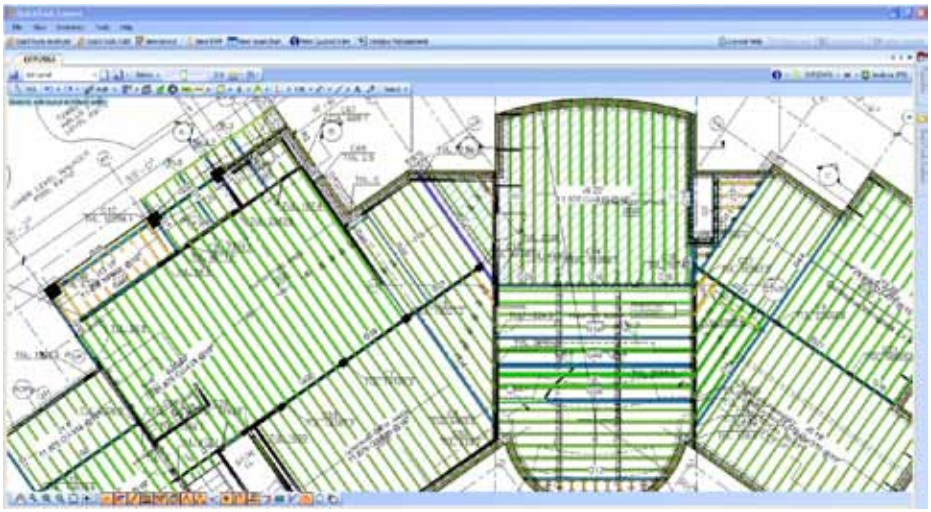
As mentioned above, a lot of efforts were put toward acoustical performance, mostly for multifamily complex and high end condominium where sound transmission takes all its meaning. After decades of testing NRC has developed tables to help architects and builders in finding the proper floor assembly.

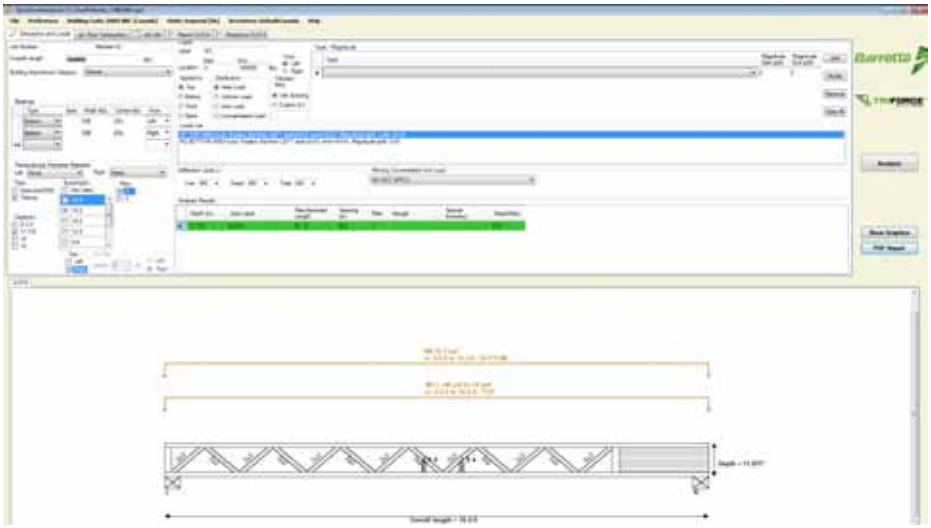
Like, fire performance, acoustic performance will be dictated by the floor assembly, based on the NRC tables published in the NBCC in annex A-9.10.3.1.B and proprietary testing on OJ2000 and open joist **TRIFORCE®**, we have tried to clearly express how to increase the acoustical performance of a floor.

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.



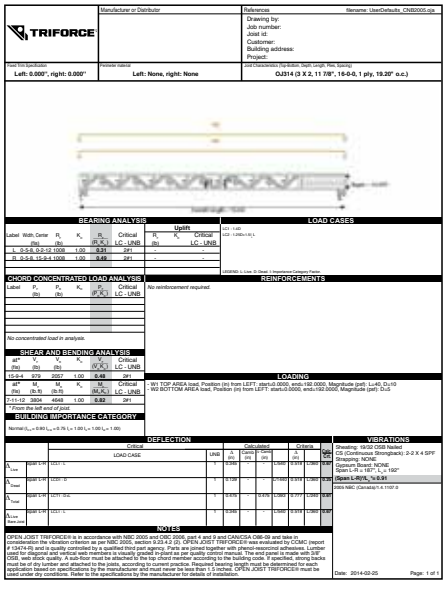


QuickTools Layout Assistant is a fully integrated 3D software solution that easily provides a robust layout and open joist **TRIFORCE®** design solution as well as the full engineering analysis required by major building codes throughout North America and Europe. Quickly draw Walls, Beams, Columns, Openings, 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.


TRIFORCE

BEARING ANALYSIS

LOAD CASES

CHORD CONCENTRATED LOAD ANALYSIS

REINFORCEMENTS

SHEAR AND BENDING ANALYSIS

LOADING

BUILDING IMPORTANCE CATEGORY

DEFLECTION

VIBRATIONS

NOTES

Single Framing Connectors

Single TRIFORCE® Joists – Canadian/Factored Resistance (lbs)

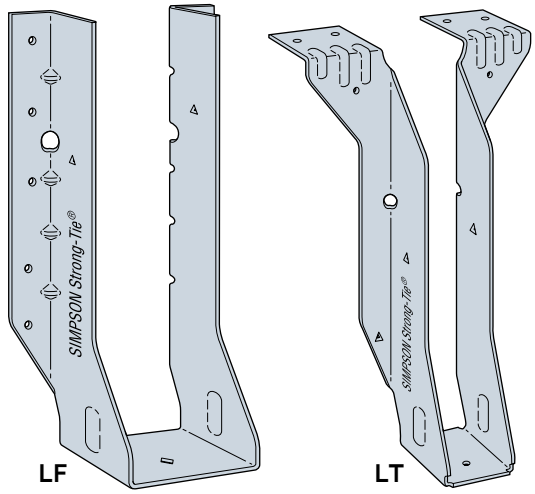
Joist Height	Top Flange							Snap-In							Face Mount						
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load	
			Header	Joist		DF	SPF			Header	Joist		DF	SPF			Header	Joist		DF	SPF
	Joist Width = 2½"																				
9 ½	LT259	2	6-10d	1-#8x1¼ws	75	2625	1725	IUS2.56/9.5	2	8-10d	—	105	2385	1690	LF259	2	10-10d	1-#8x1¼ws	105	2525	2155
11 ⅞	LT251188	2	6-10d	1-#8x1¼ws	75	2625	1725	IUS2.56/11.88	2	10-10d	—	105	2565	1820	LF2511	2	12-10d	1-#8x1¼ws	105	2880	2270
14	LT2514	2	6-10d	1-#8x1¼ws	75	2625	1725	IUS2.56/14	2	12-10d	—	105	2565	1820	LF2514	2	14-10d	1-#8x1¼ws	105	3235	2385
16	LT2516	2	6-10d	1-#8x11¼ws	75	2625	1725	IUS2.56/16	2	14-10d	—	105	2725	1935	MIU2.56/16	2½	24-16d	2-10dx1½	410	4930	3485
	Joist Width = 3½"																				
9 ¼	LT359	2	6-10d	2-#8x1¼ws	75	2625	1725	IUS3.56/9.5	2	10-10d	—	105	2370	1685	LF359	2	10-10d	2-#8x1¼ws	105	2525	2155
11 ⅞	LT351188	2	6-10d	2-#8x1¼ws	75	2625	1725	IUS3.56/11.88	2	12-10d	—	105	2370	1685	LF3511	2	12-10d	2-#8x1¼ws	105	2880	2270
14	LT3514	2	6-10d	2-#8x1¼ws	75	2625	1725	IUS3.56/14	2	12-10d	—	105	2370	1685	LF3514	2	14-10d	2-#8x1¼ws	105	3235	2385
16	LT3516	2	6-10d	2-#8x1¼ws	75	2625	1725	IUS3.56/16	2	14-10d	—	105	2370	1685	MIU3.56/16	2½	24-16d	2-10dx1½	410	4930	3485

Joist Height	45˚ Skew							Adjustable Height							Field Slope & Skew						
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load	
			Header	Joist		DF	SPF			Header	Joist		DF	SPF			Header	Joist		DF	SPF
	Joist Width = 2½"																				
9 ½	SUR/L2.56/9	3/16	14-16d	2-10dx1½	385	3950	2805	THAI322	2¼	6-10d	2-10dx1½	—	3000	2385	LSSUH310	3½	14-16d	12-10dx1½	1155	2620	1860
11 ⅞	SUR/L2.56/11	3/16	16-10d	2-10dx1½	385	3950	2805	THAI322	2¼	6-10d	2-10dx1½	—	3000	2385	LSSUH310	3½	14-16d	12-10dx1½	1155	2620	1860
14	SUR/L2.56/14	3/16	18-10d	2-10dx1½	385	3950	2805	THAI322	2¼	6-10d	2-10dx1½	—	3000	2385	LSSUH310	3½	14-16d	12-10dx1½	1155	2620	1860
16	SUR/L2.56/14	3/16	18-10d	2-10dx1½	385	3950	2805	See Wood Construction Connectors Catalogue for hanger selection.							See Wood Construction Connectors Catalogue for hanger selection.						
	Joist Width = 3½"																				
9 ½	SUR/L410	3/16	14-16d	6-16d	1540	4065	2875	THAI422	2¼	6-10d	2-10dx1½	—	3000	2385	LSSU410	3½	14-16d	12-10dx1½	1155	3055	2170
11 ⅞	SUR/L410	3/16	14-16d	6-16d	1540	4065	2875	THAI422	2¼	6-10d	2-10dx1½	—	3000	2385	LSSU410	3½	14-16d	12-10dx1½	1155	3055	2170
14	SUR/L414	3/16	18-16d	8-16d	2090	4095	2895	THAI422	2¼	6-10d	2-10dx1½	—	3000	2385	LSSU410	3½	14-16d	12-10dx1½	1155	3055	2170
16	SUR/L414	3/16	18-16d	8-16d	2090	4095	2895	See Wood Construction Connectors Catalogue for hanger selection.							See Wood Construction Connectors Catalogue for hanger selection.						

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by others.
2) The B Dim is the length of the hanger seat.
3) WS = wood screw

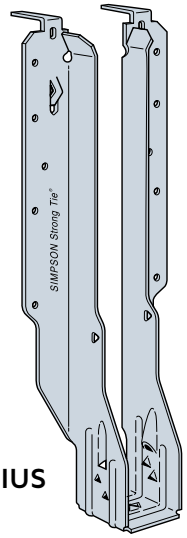
LF – 18 gauge
LT – 18 gauge

The LF and LT series feature fast and easy installation. No web stiffeners required and only one screw secures joist in hanger.

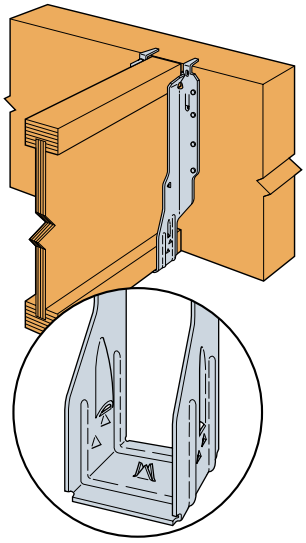


IUS – 18 gauge

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



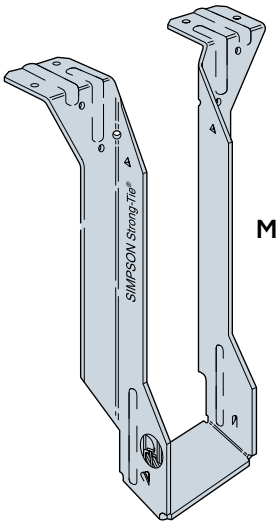
IUS



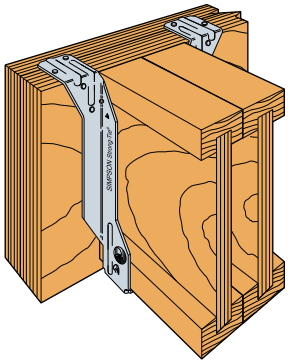
The Strong-Grip™ seat secures Triforce™ in position

MIT – 16 gauge

The MIT's Positive Angle Nailing helps minimize splitting of the I-joists' bottom flange. Features uplift capacity and extended seat design.



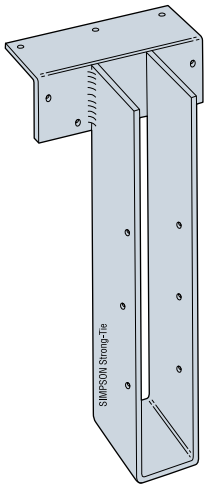
MIT



Typical MIT Installed on a Double LVL

W, WI – Top flange – 12 gauge; Stirrup – 12 gauge
WP, WPI, WPU – Top flange – 7 gauge; Stirrup – 12 gauge
HWU – Top flange – 3 gauge; Stirrup – 10 gauge

This welded series offers the greatest design flexibility and versatility, and a large selection of sizes. Suitable for welded and nailer applications, and modifications including slopes and skews.

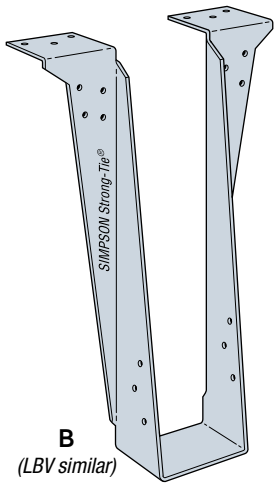


WPU
(HWU similar)

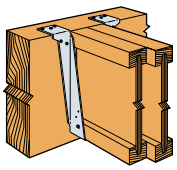
B – 12 gauge LBV – 14 gauge

The B series offers versatility for I-joists and SCL lumber. Enhanced load capacity widens the range of applications for these hangers.

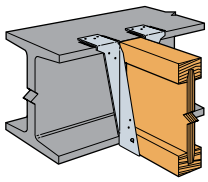
The LBV is designed especially for use with multiple ply headers 1½" to 1¾" thick, and may be used for weld-on applications.



B
(LBV similar)



Typical Double LBV Hanger Installation



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

Double Framing Connectors

Double TRIFORCE® Joists – Canadian/Factored Resistance (lbs)

Joist Height	Top Flange							Face Mount							45˚ Skew						
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load	
			Header	Joist		DF	SPF			Header	Joist		DF	SPF			Header	Joist		DF	SPF
	Joist Width = 5"																				
9½	MIT39.5-2	2½	8-16d	2-10dx1½	320	3490	2420	MIU5.12/9	2½	16-16d	2-10dx1½	410	4550	3230	HSUR/L5.12/9	2 13/16	12-16d	2-10dx1½	195	2995	2350
11⅞	MIT311.88-2	2½	8-16d	2-10dx1½	320	3490	2420	MIU5.12/11	2½	20-16d	2-10dx1½	410	4550	3230	HSUR/L5.12/11	2 13/16	16-16d	2-10dx1½	195	4190	2965
14	MIT314-2	2½	8-16d	2-10dx1½	320	3490	2420	MIU5.12/14	2½	22-16d	2-10dx1½	410	4930	3485	HSUR/L5.12/14	2 13/16	20-16d	2-10dx1½	195	4190	2965
16	MIT5.12/16	2½	8-16d	2-10dx1½	320	3490	2420	MIU5.12/16	2½	24-16d	2-10dx1½	410	4930	3485	HSUR/L5.12/16	2 13/16	24-16d	2-10dx1½	195	4190	2965
	Joist Width = 3½"																				
9½	B7.12/9.5	2½	14-16d	6-16d	1170	5940	3910	HU410-2	2½	18-16d	8-16d	2280	5780	4690	HU410-2X[4]	2½	18-16d	8-16d	1710	3755	3045
11⅞	B7.12/11.88	2½	14-16d	6-16d	1170	5940	3910	HU412-2	2½	22-16d	8-16d	2280	5780	4690	HU412-2X[4]	2½	22-16d	8-16d	1710	3755	3045
14	B7.12/14	2½	14-16d	6-16d	1170	5940	3910	HU414-2	2½	26-16d	12-16d	3420	7025	5780	HU414-2X[4]	2½	26-16d	12-16d	2565	4565	3755
16	B7.12/16	2½	14-16d	6-16d	1170	5940	3910	HU414-2	2½	26-16d	12-16d	3420	7025	5780	HU414-2X[4]	2½	26-16d	12-16d	2565	4565	3755

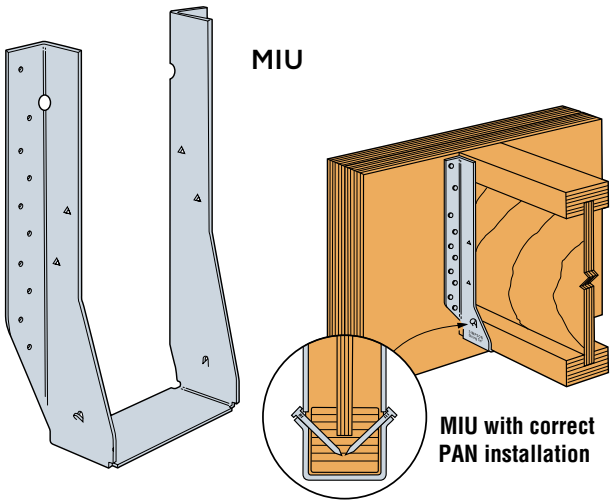
Joist Height	Adjustable Height							Field Slope & Skew						
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load	
			Header	Joist		DF	SPF			Header	Joist		DF	SPF
	Joist Width = 5"													
9½	THAI-2[2]	2½	6-10d	2-10dx1½	–	2800	2800	LSU5.12[3]	3½	24-16d	16-10dx1½	910	2600	1845
11⅞	THAI-2[2]	2½	6-10d	2-10dx1½	–	2800	2800	LSU5.12[3]	3½	24-16d	16-10dx1½	910	2600	1845
14	THAI-2[2]	2½	6-10d	2-10dx1½	–	2800	2800	LSU5.12[3]	3½	24-16d	16-10dx1½	910	2600	1845
16	See Wood Construction Connectors Catalogue for hanger selection.							See Wood Construction Connectors Catalogue for hanger selection.						
	Joist Width = 7"													
9½	See Wood Construction Connectors Catalogue for hanger selection.							See Wood Construction Connectors Catalogue for hanger selection.						
11⅞														
14														
16														

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by others.
2) THAI-2 must be special ordered, specify hanger seat width between 31/8" and 55/16"
3) LSU5.12 skew options must be factory ordered.
4) Skewed option must be special ordered. Specify skew angle and direction (i.e. HU410-2X, SKR 45°).
5) Special order depth required. Specify depth needed (i.e. LBV5.12X H=9.375").
6) The B Dim is the length of the hanger seat.

Adjustable Height						
Model	B Dim	Fastener Type		Uplift (115)	Down Load	
		Header	Joist		DF	SPF
Joist Width = 2½"						
VPA3	2½	9-10d	2-10dx1½	370	2050	1855
Joist Width = 3½"						
VPA4	2½	11-10d	2-10dx1½	370	2050	1855

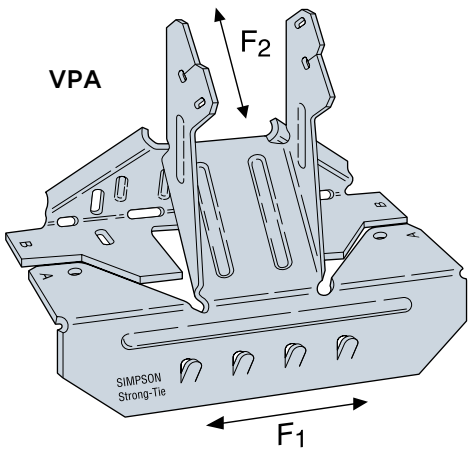
MIU – 16 gauge

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



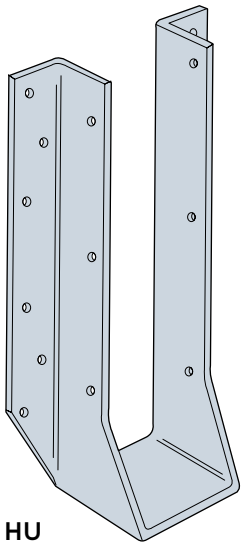
VPA – 18 gauge

This variable pitch connector allows a sloped beam to sit on a top plate without having to notch, birdmouth, bevel, or toe nail. It also provides uplift capacity. Adjustable from 3:12 to 12:12 pitch.



HU – 14 gauge

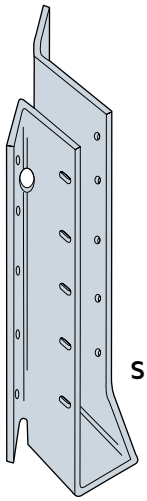
The HU series features uplift capacity and a large selection of sizes and load ranges. HU hangers have triangle holes that can be filled for increased loads. Web stiffeners required when used with I-joists.



HU

SUR/L – 16 gauge
SURI/LI – 16 gauge
HSUR/L – 14 gauge

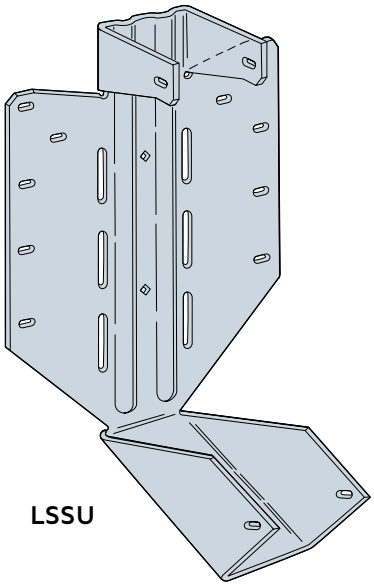
All models are skewed 45°. Normally accommodates a 40° - 50° skew. The installation of these hangers does not require a beveled end cut. Web stiffeners required when used with I-joists.



SUL

LSSUH310 and LSSU410 – 16 gauge

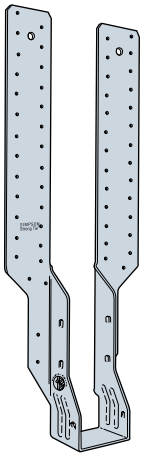
LSSU models provide uplift capacity and can be field sloped and/or skewed to 45°. Web stiffeners required when used with I-joists .



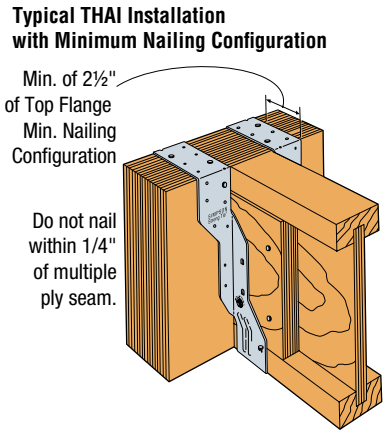
LSSU

THAI – 18 gauge
THAI-2 – 14 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 I-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 ½". Web stiffeners required when used with I-joists.



THAI



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.

Peace of mind underfoot™

www.openjoisttriforce.com