



Boise Cascade®
ENGINEERED WOOD PRODUCTS

Specifier Guide | Canada East
BCI® Joist



BCI® JOIST SPECIFIER GUIDE | EAST

Featuring
BCI® 4500s, 5000s, 6000s, 6500s, 60s, and 90s Joists

bc.com/ewp

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What You're Made of Matters

When specifying products, choices matter. Finding the right balance of durability, cost-effectiveness, and proven performance is no small task. With Boise Cascade, you're choosing a product that's backed by our commitment to quality and reliability that has earned the trust of specifiers for over 60 years.

The Boise Cascade Difference

- ▶ Full line of EWP solutions for residential, multi-family and light commercial projects
- ▶ Reliable nationwide distribution network
- ▶ More than 60 years of proven performance
- ▶ Peace of mind with our limited lifetime warranty
- ▶ EWP product support from knowledgeable engineers
- ▶ Boise Cascade® suite of software helps design, size and analyze projects
- ▶ BC FloorValue® software helps optimize floor performance before the first nail is driven.

BCI® Joist Advantages

- ▶ Flat, quiet and sturdy floors.
- ▶ Lightweight and easy to handle for quick installation.
- ▶ Flanges made with Versa-Lam® LVL for strong floors that last.
- ▶ Long spans allow for cost-efficient floor and roof layouts.
- ▶ Cut large holes, up to 24" in the web to easily run mechanicals and HVAC.
- ▶ Can be trimmed on-site without specialized skills or tools.
- ▶ 20% stronger than comparably sized dimension lumber.

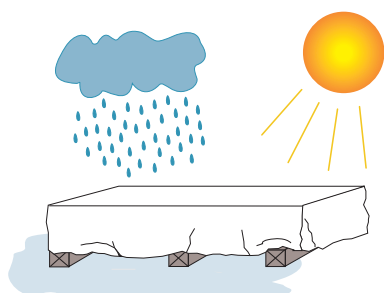
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CCMC Report Number 13300-R

Information in this document is for use **only in Canada (Limit States Design)**. For use in the United States, refer to the BCI® Joist Specifier Guide applicable to your region.

Protect product from rain and sun.



Keep product level and off the ground.

PRODUCT STORAGE AND HANDLING

- ▶ BCI® and AJS® joists and Versa-Lam® LVL
 - must be stored, installed and used in accordance with the Boise Cascade EWP Installation Guide, building codes and, to the extent not inconsistent with the Boise Cascade EWP Installation Guide, usual and customary building practices and standards.
 - must be wrapped, covered, and stored off of the ground on stickers at all times prior to installation.
 - are intended only for applications that ensure no exposure to weather or the elements and an environment that is free from moisture from any source, or any pest, organism or substance which degrades or damages wood or glue bonds.
- ▶ Unload products carefully and support to reduce excessive bowing. Use forklifts and cranes carefully to avoid damaging product.
- ▶ Do not use a visibly damaged product. Contact your local Boise Cascade representative for assistance.
- ▶ Failure to correctly store, use, or install BCI® and AJS® joists or Versa-Lam® LVL in accordance with the Boise Cascade EWP Installation Guide will void the limited warranty.



Architectural Specifications

Scope — This work includes the complete furnishing and installation of all BCI® joists as shown on the drawings, herein specified and necessary to complete the work.

Materials — BCI® joists shall be manufactured by Boise Cascade Engineered Wood Products with oriented strand board webs, Versa-Lam® laminated veneer lumber flanges, and waterproof, structural adhesives.

Joist webs shall be rated Structural I Exposure 1 by an agency listed by a model code evaluation service. Strands on the face layers of the web panels shall be oriented vertically in the joist. The web panels shall be glued together to form a continuous web member. The web panels shall be machined to fit into a groove in the center of the wide face of the flange members so as to form a pressed glue joint at that junction.

Design — The BCI® joists shall be sized and detailed to fit the dimensions and loads indicated on the plans. All designs shall be in accordance with allowable values and section properties developed in accordance with ASTM D5055, CSA O86-19, and listed under a CCMC 13300-R product evaluation report.

Drawing — Additional drawings showing layout and detail necessary for determining fit and placement in the building are (are not) to be provided by the supplier.

Fabrication — The BCI® joists and section properties shall be manufactured in a plant evaluated for fabrication by the governing code evaluation service and under the supervision of a third-party inspection agency listed by the corresponding evaluation service.

Storage and Installation — The BCI® joists, if stored prior to erection, shall be stored in a vertical and level position and protected from the weather. They shall be handled with care so they are not damaged.

The BCI® joists are to be installed in accordance with the plans and the Boise Cascade Engineered Wood Products Installation Guide. Temporary construction loads which cause stresses beyond design limits are not permitted. Erection bracing shall be provided to keep the BCI® joists straight and plumb as required and to assure adequate lateral support for the individual BCI® joists and the entire system until the sheathing material has been applied.

Codes — The design shall be based on CSA O86-19 and the National Building Code of Canada 2020 (NBCC). BCI® joists shall be evaluated by the CCMC evaluation service.

Boise Cascade Chain-Of-Custody Certifications

Boise Cascade Engineered Wood Products (EWP) has a proven track record of providing quality wood products and a nationwide building materials distribution network for our customers, helping them to enhance their own businesses.

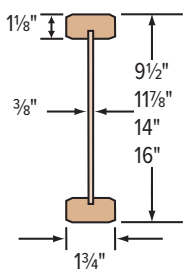
Boise Cascade engineered wood products build better homes with stronger, stiffer floors using only wood purchased in compliance with a number of green building programs.

Take a moment to view our sustainability certification at bc.com/portal/sustainability/certification-audits/ or go to bc.com/sustainability for more information.

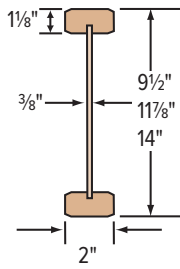
Boise Cascade engineered wood products throughout North America participate in SFI® Fiber Sourcing, SFI Chain of Custody, PEFC® Chain of Custody, and/or FSC® Chain-of-Custody and Controlled Wood certification programs. These programs offer the opportunity for homebuilders to achieve LEED® points in residential and commercial green building programs including LEED for Homes and LEED for New Construction.

Boise Cascade engineered wood products are also NAHB Research Center Green Approved, enabling homebuilders to also obtain green building points through the Green Building Standards.

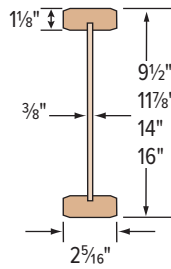
BCI Joist Product Profiles



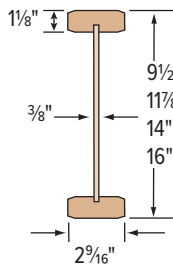
BCI® 4500s



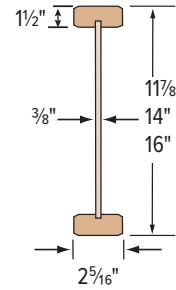
BCI® 5000s



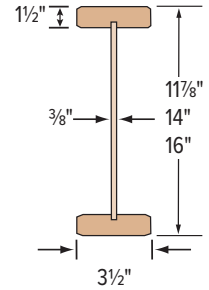
BCI® 6000s



BCI® 6500s



BCI® 60s



BCI® 90s

BCI® joists shall be installed in dry-use applications only, per their respective evaluation reports.

Factored Resistances (Limit States Design)

BCI® Joist		Factored Moment Resistance (lbs-ft)	Factored Shear Resistance (lbs)	Joist Stiffness EI (x10 ⁶ lbs-in ²)	Shear Deformation Coefficient, K (x10 ⁶ lbs)	Joist Weight (lbs/ft)	Factored End Bearing Resistance (lbs)		Factored Intermediate Bearing Resistance (lbs)	
							1 1/2" Min. Bearing Length ⁽¹⁾		3 1/2" Min. Bearing Length	
							No Web Stiffeners (lbs)	WITH Web Stiffeners (lbs)	No Web Stiffeners (lbs)	WITH Web Stiffeners (lbs)
4500s	9 1/2"	3,980	2,330	155	5.1	2.1	1,500	1,780	3,310	3,710
	11 7/8"	5,100	2,560	260	6.4	2.4	1,500	2,250	3,550	4,500
	14"	6,040	2,880	380	7.5	2.7	1,500	2,410	3,710	4,810
	16"	6,890	3,120	515	8.6	2.9	1,500	2,560	3,790	5,050
5000s	9 1/2"	4,570	2,330	175	5.2	2.3	1,500	1,780	3,310	3,710
	11 7/8"	5,860	2,560	295	6.4	2.5	1,500	2,250	3,550	4,500
	14"	6,950	2,880	425	7.6	2.9	1,500	2,410	3,710	4,810
6000s	9 1/2"	5,310	2,490	200	5.2	2.5	1,850	2,170	3,790	4,180
	11 7/8"	6,820	2,640	335	6.5	2.8	1,850	2,250	3,950	4,500
	14"	8,080	3,040	490	7.6	3.1	1,850	2,410	4,100	4,970
	16"	9,220	3,430	660	8.7	3.4	1,850	2,560	4,180	5,290
6500s	9 1/2"	5,880	2,490	220	5.3	2.7	1,850	2,170	3,790	4,180
	11 7/8"	7,540	2,640	365	6.5	3.0	1,850	2,250	3,950	4,500
	14"	8,950	3,040	535	7.7	3.3	1,850	2,410	4,100	4,970
	16"	10,210	3,430	720	8.7	3.5	1,850	2,560	4,180	5,290
60s	11 7/8"	10,370	2,640	450	6.6	3.2	1,850	2,250	3,950	4,500
	14"	12,370	3,040	660	7.7	3.5	1,850	2,410	4,110	4,970
	16"	14,170	3,430	895	8.7	3.8	1,850	2,560	4,180	5,290
90s	11 7/8"	15,880	3,390	675	6.7	4.3	1,970	2,920	4,780	5,840
	14"	18,940	3,710	980	7.8	4.6	1,970	3,080	4,810	6,080
	16"	21,700	4,020	1330	8.9	4.9	2,050	3,390	4,900	6,310

(1) Minimum bearing length at end support is 1 1/2".

NOTES

- All resistance factors, as per CSA O86-19 have been applied.
- BCI® joist deflection under uniform load may be calculated with this equation:

$$\Delta = \frac{5wI^4}{384EI} + \frac{wI^2}{K}$$

Δ = deflection (in)

w = uniform load (lb/in)

I = clear span (in)

EI = bending stiffness (lb-in²)

K = shear deformation coefficient (lb)

Building Code Evaluation Report: CCMC 13300-R

Allowable Uniform Floor Load (PLF)

Design Span	Specified Loads (PLF)	BCI® 4500s Depth				BCI® 5000s Depth				BCI® 6000s Depth				BCI® 6500s Depth				BCI® 60s Depth			BCI® 90s Depth		
		9½"	11⅞"	14"	16"	9½"	11⅞"	14"	16"	9½"	11⅞"	14"	16"	9½"	11⅞"	14"	16"	11⅞"	14"	16"	11⅞"	14"	16"
6'	Unfactored Live Load for L/360	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Unfactored Total Load for L/240	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Factored Total Load	441	473	494	500	441	473	494	505	526	546	557	505	526	546	557	526	548	557	637	641	653	
8'	Unfactored Live Load for L/360	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Unfactored Total Load for L/240	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Factored Total Load	331	355	371	375	331	355	371	379	395	410	418	379	395	410	418	395	411	418	478	481	490	
10'	Unfactored Live Load for L/360	197	—	—	—	219	—	—	245	—	—	—	266	—	—	—	—	—	—	—	—	—	—
	Unfactored Total Load for L/240	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	Factored Total Load	264	284	296	300	264	284	296	303	316	328	334	303	316	328	334	316	328	334	382	384	392	
12'	Unfactored Live Load for L/360	119	193	—	—	133	216	—	150	241	—	—	163	259	—	—	—	—	—	—	—	—	—
	Unfactored Total Load for L/240	179	—	—	—	200	—	—	225	—	—	—	245	—	—	—	—	—	—	—	—	—	—
	Factored Total Load	220	236	247	250	220	236	247	252	263	273	278	252	263	273	278	263	274	278	318	320	326	
14'	Unfactored Live Load for L/360	77	126	180	—	86	141	199	97	158	225	—	106	170	—	—	204	—	—	—	—	—	—
	Unfactored Total Load for L/240	115	189	—	—	129	—	—	146	—	—	—	160	—	—	—	—	—	—	—	—	—	—
	Factored Total Load	162	202	212	214	186	202	212	216	225	234	238	216	225	234	238	225	234	238	273	274	280	
16'	Unfactored Live Load for L/360	52	86	124	165	59	97	137	66	109	156	206	73	118	169	—	142	202	—	201	—	—	—
	Unfactored Total Load for L/240	79	130	—	—	88	146	—	100	164	—	—	109	177	—	—	—	—	—	—	—	—	—
	Factored Total Load	124	159	185	187	142	177	185	165	197	205	209	181	197	205	209	197	205	209	239	240	245	
18'	Unfactored Live Load for L/360	—	61	89	119	42	69	98	47	78	112	149	52	84	121	160	102	146	—	147	206	—	—
	Unfactored Total Load for L/240	—	92	133	—	63	104	148	71	117	168	—	78	127	—	—	154	—	—	—	—	—	—
	Factored Total Load	—	125	149	166	112	144	164	131	168	182	185	143	175	182	185	175	182	185	212	213	217	
20'	Unfactored Live Load for L/360	—	45	65	88	—	51	73	—	58	83	110	—	62	90	120	76	109	145	110	155	—	—
	Unfactored Total Load for L/240	—	68	98	132	—	77	109	—	87	125	166	—	94	136	—	114	—	—	165	—	—	—
	Factored Total Load	—	102	120	137	—	117	139	—	136	161	167	—	150	164	167	158	164	167	191	192	196	
22'	Unfactored Live Load for L/360	—	—	50	67	—	—	55	—	44	63	84	—	47	69	91	58	83	111	84	119	158	
	Unfactored Total Load for L/240	—	—	75	100	—	—	83	—	66	95	127	—	71	103	137	87	125	—	126	—	—	
	Factored Total Load	—	—	99	113	—	—	114	—	112	133	152	—	124	147	152	143	149	152	173	174	178	
24'	Unfactored Live Load for L/360	—	—	—	52	—	—	43	—	—	49	66	—	—	53	71	45	65	87	66	94	125	
	Unfactored Total Load for L/240	—	—	—	78	—	—	64	—	—	74	99	—	—	80	107	68	98	131	99	141	—	
	Factored Total Load	—	—	—	95	—	—	96	—	—	112	128	—	—	124	139	131	137	139	159	160	163	
26'	Unfactored Live Load for L/360	—	—	—	41	—	—	—	—	—	—	52	—	—	42	56	—	52	69	52	75	100	
	Unfactored Total Load for L/240	—	—	—	62	—	—	—	—	—	—	78	—	—	64	85	—	78	104	79	112	150	
	Factored Total Load	—	—	—	81	—	—	—	—	—	—	109	—	—	105	120	—	126	128	147	148	150	
28'	Unfactored Live Load for L/360	—	—	—	—	—	—	—	—	—	—	42	—	—	—	46	—	42	56	42	60	81	
	Unfactored Total Load for L/240	—	—	—	—	—	—	—	—	—	—	63	—	—	—	69	—	63	84	63	91	122	
	Factored Total Load	—	—	—	—	—	—	—	—	—	—	94	—	—	—	104	—	117	119	136	137	140	
30'	Unfactored Live Load for L/360	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	46	—	50	67	
	Unfactored Total Load for L/240	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	69	—	75	100	
	Factored Total Load	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	111	—	128	130	

NOTES

► Loading conditions:

- Unfactored live load values are limited by deflection equal to L/360. For deflections limited to L/480, multiply live load values by 0.75 (to reduce vibration).
- Unfactored total load values are limited by deflection equal to L/240.
- Factored total load values are limited by shear, end/interior reactions or bending moment. Values assume minimum bearing lengths without web stiffeners.
- All three loading cases must be checked. Where a live load value is not shown, the factored total load value will control.

- For 2-ply, double all loading values (unfactored live load, unfactored total load, or factored total load).

► Table values:

- represent the most restrictive of simple or continuous span beams applications and assume an uniform loading. Span is measured center-to-center of the supports. Analyse continuous span beams with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- assume that lateral support is provided at each support and continuously along the compression edge of the beam.
- do not consider composite action from gluing and nailing floor sheathing.
- This table was designed to apply to a broad range of applications. It may be possible to exceed these limitations by analysing a specific application with the BC Calc® software.

Actual Deflection (in inches) Based on Span and Limit

Deflection Limit	Span												
	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
L/480	0.15"	0.20"	0.25"	0.30"	0.35"	0.40"	0.45"	0.50"	0.55"	0.60"	0.65"	0.70"	0.75"
L/360	0.20"	0.27"	0.33"	0.40"	0.47"	0.53"	0.60"	0.67"	0.73"	0.80"	0.87"	0.93"	1.00"
L/240	0.30"	0.40"	0.50"	0.60"	0.70"	0.80"	0.90"	1.00"	1.10"	1.20"	1.30"	1.40"	1.50"

Residential Floor Span Tables (40 PSF Live Load, 15 PSF Dead Load)

About Floor Performance

Homeowner's expectations and opinions vary greatly due to the subjective nature of rating a new floor. Communication with the ultimate end user to determine their expectation is critical. **Vibration** is usually the cause of most complaints. Installing lateral bridging may help; however, squeaks may occur if not installed properly. Spacing the joists closer together does little to affect the perception of the floor's

performance. The most common methods used to increase the performance and reduce vibration of wood floor systems is to **increase the joist depth, limit joist deflections, glue and screw a thicker tongue-and-groove subfloor, install the joists vertically plumb with level-bearing supports, and install a direct-attached ceiling to the bottom flange of the joists.**

5/8" Plywood Subfloor — Glued and Nailed

BCI® Joist		Simple Span								Continuous Span							
Series	Depth	No Gypsum Ceiling Attached				1/2" Gypsum Ceiling Attached				No Gypsum Ceiling Attached				1/2" Gypsum Ceiling Attached			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
4500s	9 1/2"	15'-1"	14'-3"	13'-9"	N/A	15'-7"	14'-9"	14'-3"	N/A	15'-9"	14'-11"	14'-5"	N/A	16'-3"	15'-5"	14'-11"	N/A
	11 7/8"	16'-11"	15'-11"	15'-5"	N/A	17'-5"	16'-6"	16'-0"	N/A	17'-8"	16'-8"	16'-1"	N/A	18'-3"	17'-3"	16'-8"	N/A
	14"	18'-5"	17'-4"	16'-9"	N/A	19'-3"	17'-11"	17'-4"	N/A	19'-6"	18'-1"	17'-6"	N/A	20'-4"	18'-11"	18'-2"	N/A
	16"	20'-1"	18'-8"	17'-11"	N/A	20'-11"	19'-6"	18'-9"	N/A	21'-2"	19'-8"	18'-11"	N/A	22'-2"	20'-8"	19'-10"	N/A
5000s	9 1/2"	15'-5"	14'-7"	14'-1"	N/A	15'-11"	15'-0"	14'-6"	N/A	16'-1"	15'-2"	14'-8"	N/A	16'-7"	15'-8"	15'-2"	N/A
	11 7/8"	17'-3"	16'-3"	15'-9"	N/A	17'-10"	16'-10"	16'-3"	N/A	18'-0"	17'-0"	16'-5"	N/A	18'-9"	17'-7"	17'-0"	N/A
	14"	18'-11"	17'-8"	17'-1"	N/A	19'-8"	18'-4"	17'-8"	N/A	20'-0"	18'-7"	17'-10"	N/A	20'-10"	19'-5"	18'-7"	N/A
	16"	20'-10"	18'-10"	17'-10"	N/A	21'-0"	19'-10"	18'-10"	N/A	21'-2"	19'-11"	18'-11"	N/A	22'-2"	20'-10"	19'-10"	N/A
6000s	9 1/2"	15'-10"	14'-11"	14'-5"	N/A	16'-3"	15'-4"	14'-10"	N/A	16'-6"	15'-7"	15'-1"	N/A	17'-0"	16'-0"	15'-6"	N/A
	11 7/8"	17'-8"	16'-8"	16'-1"	N/A	18'-2"	17'-2"	16'-7"	N/A	18'-7"	17'-5"	16'-10"	N/A	19'-3"	17'-11"	17'-4"	N/A
	14"	19'-6"	18'-1"	17'-6"	N/A	20'-3"	18'-9"	18'-0"	N/A	20'-7"	19'-1"	18'-3"	N/A	21'-5"	19'-11"	19'-1"	N/A
	16"	21'-2"	19'-8"	18'-10"	N/A	22'-0"	20'-6"	19'-7"	N/A	22'-5"	20'-9"	19'-11"	N/A	23'-3"	21'-8"	20'-9"	N/A
6500s	9 1/2"	16'-1"	15'-2"	14'-8"	N/A	16'-6"	15'-7"	15'-0"	N/A	16'-9"	15'-10"	15'-3"	N/A	17'-3"	16'-3"	15'-9"	N/A
	11 7/8"	18'-0"	16'-11"	16'-4"	N/A	18'-7"	17'-5"	16'-10"	N/A	18'-11"	17'-8"	17'-1"	N/A	19'-8"	18'-3"	17'-7"	N/A
	14"	19'-11"	18'-5"	17'-9"	N/A	20'-7"	19'-2"	18'-4"	N/A	21'-0"	19'-6"	18'-8"	N/A	21'-9"	20'-3"	19'-5"	N/A
	16"	21'-7"	20'-0"	19'-2"	N/A	22'-5"	20'-10"	19'-11"	N/A	22'-10"	21'-2"	20'-3"	N/A	23'-8"	22'-0"	21'-1"	N/A
60s	11 7/8"	18'-9"	17'-6"	16'-11"	N/A	19'-4"	18'-0"	17'-5"	N/A	19'-10"	18'-5"	17'-8"	N/A	20'-6"	19'-0"	18'-2"	N/A
	14"	20'-10"	19'-4"	18'-6"	N/A	21'-6"	20'-0"	19'-1"	N/A	22'-1"	20'-5"	19'-6"	N/A	22'-9"	21'-2"	20'-3"	N/A
	16"	22'-8"	21'-0"	20'-1"	N/A	23'-5"	21'-9"	20'-10"	N/A	24'-0"	22'-3"	21'-3"	N/A	24'-10"	23'-0"	22'-0"	N/A
90s	11 7/8"	20'-7"	19'-0"	18'-2"	N/A	21'-2"	19'-6"	18'-8"	N/A	21'-9"	20'-1"	19'-3"	N/A	22'-5"	20'-8"	19'-9"	N/A
	14"	22'-10"	21'-1"	20'-2"	N/A	23'-6"	21'-9"	20'-9"	N/A	24'-2"	22'-4"	21'-4"	N/A	24'-11"	23'-0"	21'-11"	N/A
	16"	24'-11"	22'-11"	21'-11"	N/A	25'-7"	23'-8"	22'-7"	N/A	26'-4"	24'-4"	23'-2"	N/A	27'-1"	25'-0"	23'-11"	N/A

3/4" Plywood Subfloor — Glued and Nailed

BCI® Joist		Simple Span								Continuous Span							
Series	Depth	No Gypsum Ceiling Attached				1/2" Gypsum Ceiling Attached				No Gypsum Ceiling Attached				1/2" Gypsum Ceiling Attached			
		12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
4500s	9 1/2"	16'-0"	15'-1"	14'-7"	13'-9"	16'-6"	15'-7"	14'-10"	13'-9"	16'-9"	15'-9"	15'-2"	14'-0"	17'-3"	16'-4"	15'-9"	14'-0"
	11 7/8"	17'-11"	16'-11"	16'-3"	15'-7"	18'-7"	17'-6"	16'-10"	15'-11"	18'-10"	17'-8"	17'-0"	15'-10"	19'-8"	18'-3"	17'-7"	15'-10"
	14"	19'-10"	18'-5"	17'-8"	17'-0"	20'-8"	19'-3"	18'-4"	17'-4"	20'-11"	19'-5"	18'-7"	17'-3"	21'-10"	20'-4"	19'-5"	17'-3"
	16"	21'-7"	20'-0"	19'-1"	18'-2"	22'-6"	20'-11"	20'-0"	18'-6"	22'-10"	21'-2"	20'-2"	18'-5"	23'-9"	22'-2"	20'-8"	18'-5"
5000s	9 1/2"	16'-4"	15'-5"	14'-11"	14'-3"	16'-10"	15'-11"	15'-4"	14'-4"	17'-1"	16'-1"	15'-6"	14'-11"	17'-7"	16'-7"	16'-0"	15'-0"
	11 7/8"	18'-4"	17'-3"	16'-7"	15'-11"	19'-0"	17'-9"	17'-2"	16'-5"	19'-5"	18'-0"	17'-4"	16'-8"	20'-1"	18'-9"	17'-11"	17'-2"
	14"	20'-4"	18'-10"	18'-0"	17'-4"	21'-1"	19'-8"	18'-9"	17'-11"	21'-6"	19'-11"	19'-0"	18'-1"	22'-4"	20'-9"	19'-10"	18'-6"
	16"	22'-9"	21'-1"	20'-1"	19'-1"	23'-7"	21'-11"	20'-11"	19'-10"	24'-1"	22'-4"	21'-3"	20'-2"	24'-11"	23'-2"	22'-2"	21'-0"
6000s	9 1/2"	17'-0"	16'-0"	15'-5"	14'-10"	17'-5"	16'-5"	15'-10"	15'-2"	17'-9"	16'-9"	16'-2"	15'-6"	18'-3"	17'-2"	16'-7"	15'-11"
	11 7/8"	19'-3"	17'-11"	17'-3"	16'-7"	19'-11"	18'-6"	17'-9"	17'-0"	20'-4"	18'-10"	18'-0"	17'-3"	21'-0"	19'-7"	18'-8"	17'-9"
	14"	21'-4"	19'-9"	18'-10"	17'-11"	22'-1"	20'-6"	19'-7"	18'-7"	22'-7"	20'-11"	19'-11"	18'-11"	23'-4"	21'-8"	20'-8"	19'-8"
	16"	23'-2"	21'-6"	20'-6"	19'-5"	24'-0"	22'-3"	21'-3"	20'-2"	24'-6"	22'-9"	21'-8"	20'-6"	25'-4"	23'-7"	22'-6"	21'-2"
60s	11 7/8"	20'-2"	18'-8"	17'-10"	17'-1"	20'-9"	19'-3"	18'-4"	17'-6"	21'-4"	19'-9"	18'-10"	17'-11"	21'-11"	20'-4"	19'-5"	18'-5"
	14"	22'-5"	20'-8"	19'-9"	18'-8"	23'-0"	21'-4"	20'-4"	19'-4"	23'-8"	21'-11"	20'-10"	19'-9"	24'-4"	22'-7"	21'-7"	20'-5"
	16"	24'-4"	22'-6"	21'-5"	20'-4"	25'-1"	23'-3"	22'-2"	21'-0"	25'-9"	23'-10"	22'-8"	21'-2"	26'-6"	24'-7"	23'-6"	21'-2"
90s	11 7/8"	22'-1"	20'-4"	19'-4"	18'-4"	22'-7"	20'-10"	19'-10"	18'-9"	23'-4"	21'-7"	20'-6"	19'-5"	23'-10"	22'-1"	21'-0"	19'-11"
	14"	24'-6"	22'-7"	21'-6"	20'-4"	25'-1"	23'-2"	22'-1"	20'-10"	25'-11"	23'-11"	22'-9"	21'-6"	26'-6"	24'-6"	23'-4"	22'-1"
	16"	26'-8"	24'-7"	23'-4"	22'-1"	27'-3"	25'-3"	24'-0"	22'-8"	28'-2"	26'-0"	24'-9"	23'-4"	28'-10"	26'-8"	25'-5"	24'-0"

NOTES FOR TABLES ON PAGES 6 AND 7

- Tables are based on:
 - deflection limits of L/240 total load and L/360 live load,
 - uniform loads of 40 PSF live load and 15 PSF dead load (for standard term load duration),
 - minimum end bearing length is 1 1/2"; minimum interior bearing length is 3 1/2".
 - clear spans between supports.

- Spans shown are in accordance with NBCC2020.
- Tabulated values shown assume a glued and nailed subfloor and are in compliance with the CCMC Vibration Criteria "Concluding" Report (dated September 4, 1997), in accordance with CSA O86-19 Clause A.5.4.5.2 b) provision.
- Lateral support must be provided for the compression edge and also at the bearings to prevent lateral displacement or rotation.

(continued on page 7)

WARNING: Use of Span Tables for Commercial Projects (NBCC 2020: Part 4): All projects within the scope of Part 4 of the National Building Code of Canada (NBCC) must consider the effects of concentrated loads, as stipulated in article 4.1.5.9. The designer of record must verify the effects of a concentrated load on the joists on all projects within the scope of Part 4 of NBCC. Table 4.1.5.9 lists concentrated loads that shall be analysed with respect to the intended use of the floor. Given the numerous possible permutations, the span tables listed above do not take the effects of concentrated loads into consideration.

Residential Floor Span Tables (40 PSF Live Load, 15 PSF Dead Load)

¹⁹/₃₂" Oriented Strand Board (OSB) Subfloor — Glued and Nailed

BCI® Joist		Simple Span								Continuous Span							
		No Gypsum Ceiling Attached				½" Gypsum Ceiling Attached				No Gypsum Ceiling Attached				½" Gypsum Ceiling Attached			
Series	Depth	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
4500s	9½"	15'-4"	14'-5"	13'-11"	N/A	15'-10"	14'-11"	14'-5"	N/A	16'-0"	15'-1"	14'-7"	N/A	16'-6"	15'-7"	15'-1"	N/A
	11⅞"	17'-1"	16'-2"	15'-7"	N/A	17'-8"	16'-9"	16'-2"	N/A	17'-10"	16'-10"	16'-3"	N/A	18'-7"	17'-6"	16'-11"	N/A
	14"	18'-9"	17'-6"	16'-11"	N/A	19'-6"	18'-2"	17'-7"	N/A	19'-9"	18'-4"	17'-8"	N/A	20'-8"	19'-3"	18'-5"	N/A
	16"	20'-5"	18'-11"	18'-2"	N/A	21'-3"	19'-10"	19'-0"	N/A	21'-6"	20'-0"	19'-2"	N/A	22'-6"	21'-0"	20'-1"	N/A
5000s	9½"	15'-8"	14'-9"	14'-3"	N/A	16'-1"	15'-3"	14'-8"	N/A	16'-4"	15'-5"	14'-11"	N/A	16'-10"	15'-11"	15'-4"	N/A
	11⅞"	17'-6"	16'-6"	15'-11"	N/A	18'-0"	17'-0"	16'-5"	N/A	18'-4"	17'-3"	16'-8"	N/A	19'-0"	17'-10"	17'-2"	N/A
	14"	19'-3"	17'-11"	17'-3"	N/A	20'-0"	18'-7"	17'-11"	N/A	20'-4"	18'-10"	18'-1"	N/A	21'-2"	19'-8"	18'-10"	N/A
	16"	21'-6"	19'-11"	19'-1"	N/A	22'-4"	20'-9"	19'-11"	N/A	22'-9"	21'-4"	20'-2"	N/A	23'-8"	22'-0"	21'-1"	N/A
6000s	9½"	16'-0"	15'-1"	14'-7"	N/A	16'-6"	15'-6"	15'-0"	N/A	16'-9"	15'-9"	15'-3"	N/A	17'-2"	16'-3"	15'-8"	N/A
	11⅞"	17'-11"	16'-10"	16'-3"	N/A	18'-6"	17'-5"	16'-9"	N/A	18'-10"	17'-7"	17'-0"	N/A	19'-7"	18'-2"	17'-7"	N/A
	14"	19'-9"	18'-4"	17'-8"	N/A	20'-6"	19'-1"	18'-3"	N/A	20'-11"	19'-5"	18'-7"	N/A	21'-8"	20'-2"	19'-4"	N/A
	16"	21'-6"	19'-11"	19'-1"	N/A	22'-4"	20'-9"	19'-11"	N/A	22'-9"	21'-4"	20'-2"	N/A	23'-8"	22'-0"	21'-1"	N/A
6500s	9½"	16'-3"	15'-4"	14'-10"	N/A	16'-8"	15'-9"	15'-3"	N/A	17'-0"	16'-0"	15'-5"	N/A	17'-5"	16'-6"	15'-11"	N/A
	11⅞"	18'-2"	17'-2"	16'-7"	N/A	18'-10"	17'-8"	17'-0"	N/A	19'-3"	17'-11"	17'-3"	N/A	19'-11"	18'-6"	17'-10"	N/A
	14"	20'-2"	18'-8"	17'-11"	N/A	20'-11"	19'-5"	18'-7"	N/A	21'-4"	19'-9"	18'-11"	N/A	22'-1"	20'-7"	19'-8"	N/A
	16"	21'-11"	20'-4"	19'-5"	N/A	22'-9"	21'-1"	20'-3"	N/A	23'-2"	21'-6"	20'-6"	N/A	24'-0"	22'-4"	21'-5"	N/A
60s	11⅞"	19'-0"	17'-9"	17'-1"	N/A	19'-8"	18'-3"	17'-7"	N/A	20'-2"	18'-8"	17'-11"	N/A	20'-9"	19'-3"	18'-5"	N/A
	14"	21'-2"	19'-7"	18'-9"	N/A	21'-10"	20'-3"	19'-4"	N/A	22'-4"	20'-8"	19'-9"	N/A	23'-1"	21'-5"	20'-6"	N/A
	16"	23'-0"	21'-4"	20'-4"	N/A	23'-9"	22'-1"	21'-1"	N/A	24'-4"	22'-6"	21'-6"	N/A	25'-2"	23'-4"	22'-4"	N/A
	11⅞"	20'-10"	19'-3"	18'-5"	N/A	21'-5"	19'-9"	18'-11"	N/A	22'-1"	20'-4"	19'-5"	N/A	22'-8"	20'-11"	20'-0"	N/A
90s	14"	23'-2"	21'-4"	20'-5"	N/A	23'-9"	22'-0"	21'-0"	N/A	24'-6"	22'-7"	21'-7"	N/A	25'-2"	23'-3"	22'-3"	N/A
	16"	25'-2"	23'-3"	22'-2"	N/A	25'-11"	23'-11"	22'-10"	N/A	26'-8"	24'-7"	23'-5"	N/A	27'-5"	25'-4"	24'-2"	N/A

²³/₃₂" Oriented Strand Board (OSB) Subfloor — Glued and Nailed

BCI® Joist		Simple Span								Continuous Span							
		No Gypsum Ceiling Attached				½" Gypsum Ceiling Attached				No Gypsum Ceiling Attached				½" Gypsum Ceiling Attached			
Series	Depth	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"	12"	16"	19.2"	24"
4500s	9½"	16'-1"	15'-2"	14'-8"	13'-9"	16'-7"	15'-8"	14'-10"	13'-9"	16'-10"	15'-10"	15'-3"	14'-0"	17'-4"	16'-5"	15'-10"	14'-0"
	11⅞"	18'-0"	17'-0"	16'-4"	15'-8"	18'-8"	17'-7"	16'-11"	15'-11"	19'-0"	17'-9"	17'-1"	15'-10"	19'-9"	18'-5"	17'-8"	15'-10"
	14"	20'-0"	18'-6"	17'-9"	17'-1"	20'-9"	19'-4"	18'-6"	17'-4"	21'-1"	19'-7"	18'-8"	17'-3"	21'-11"	20'-6"	19'-4"	17'-3"
	16"	21'-9"	20'-2"	19'-3"	18'-3"	22'-7"	21'-1"	20'-2"	18'-6"	22'-11"	21'-4"	20'-4"	18'-5"	23'-11"	22'-4"	20'-8"	18'-5"
5000s	9½"	16'-5"	15'-6"	14'-11"	14'-4"	16'-11"	16'-0"	15'-5"	14'-4"	17'-2"	16'-2"	15'-7"	15'-0"	17'-8"	16'-8"	16'-1"	15'-0"
	11⅞"	18'-6"	17'-4"	16'-8"	16'-0"	19'-2"	17'-11"	17'-3"	16'-6"	19'-6"	18'-1"	17'-5"	16'-9"	20'-3"	18'-10"	18'-0"	17'-0"
	14"	20'-6"	19'-0"	18'-1"	17'-5"	21'-3"	19'-9"	18'-11"	18'-0"	21'-8"	20'-1"	19'-2"	18'-2"	22'-6"	20'-11"	20'-0"	18'-6"
	16"	22'-11"	21'-3"	20'-3"	19'-2"	23'-9"	22'-1"	21'-1"	20'-0"	24'-3"	22'-5"	21'-5"	20'-3"	25'-1"	23'-4"	22'-4"	21'-2"
6000s	9½"	16'-10"	15'-11"	15'-4"	14'-8"	17'-3"	16'-4"	15'-9"	15'-0"	17'-7"	16'-7"	16'-0"	15'-4"	18'-1"	17'-0"	16'-5"	15'-9"
	11⅞"	19'-0"	17'-9"	17'-1"	16'-4"	19'-8"	18'-3"	17'-7"	16'-10"	20'-1"	18'-7"	17'-10"	17'-1"	20'-9"	19'-4"	18'-5"	17'-7"
	14"	21'-1"	19'-6"	18'-7"	17'-9"	21'-9"	20'-3"	19'-4"	18'-4"	22'-3"	20'-8"	19'-8"	18'-8"	23'-0"	21'-5"	20'-6"	19'-5"
	16"	22'-11"	21'-3"	20'-3"	19'-2"	23'-9"	22'-1"	21'-1"	20'-0"	24'-3"	22'-5"	21'-5"	20'-3"	25'-1"	23'-4"	22'-4"	21'-2"
6500s	9½"	17'-1"	16'-2"	15'-6"	14'-11"	17'-6"	16'-6"	15'-11"	15'-3"	17'-10"	16'-10"	16'-3"	15'-7"	18'-4"	17'-3"	16'-8"	16'-0"
	11⅞"	19'-5"	18'-0"	17'-4"	16'-7"	20'-0"	18'-7"	17'-10"	17'-1"	20'-6"	19'-0"	18'-1"	17'-4"	21'-2"	19'-8"	18'-9"	17'-10"
	14"	21'-6"	19'-11"	19'-0"	18'-0"	22'-2"	20'-7"	19'-8"	18'-8"	22'-9"	21'-1"	20'-1"	19'-0"	23'-6"	21'-10"	20'-10"	19'-9"
	16"	23'-4"	21'-8"	20'-7"	19'-6"	24'-1"	22'-5"	21'-5"	20'-4"	24'-8"	22'-10"	21'-10"	20'-8"	25'-6"	23'-9"	22'-8"	21'-2"
60s	11⅞"	20'-3"	18'-9"	17'-11"	17'-2"	20'-10"	19'-4"	18'-5"	17'-7"	21'-5"	19'-10"	18'-11"	18'-0"	22'-1"	20'-6"	19'-6"	18'-6"
	14"	22'-6"	20'-10"	19'-10"	18'-10"	23'-2"	21'-6"	20'-6"	19'-5"	23'-10"	22'-0"	21'-0"	19'-11"	24'-6"	22'-9"	21'-8"	20'-7"
	16"	24'-6"	22'-8"	21'-7"	20'-5"	25'-3"	23'-5"	22'-4"	21'-2"	25'-11"	24'-0"	22'-10"	21'-2"	26'-8"	24'-9"	23'-7"	21'-2"
	11⅞"	22'-3"	20'-6"	19'-6"	18'-5"	22'-8"	21'-0"	20'-0"	18'-11"	23'-6"	21'-8"	20'-8"	19'-6"	24'-0"	22'-3"	21'-2"	20'-0"
90s	14"	24'-8"	22'-9"	21'-8"	20'-5"	25'-2"	23'-4"	22'-2"	21'-0"	26'-1"	24'-1"	22'-11"	21'-7"	26'-8"	24'-8"	23'-6"	22'-3"
	16"	26'-10"	24'-9"	23'-6"	22'-2"	27'-5"	25'-5"	24'-2"	22'-10"	28'-4"	26'-2"	24'-11"	23'-6"	29'-0"	26'-10"	25'-7"	24'-2"

(Continued from page 6)

- Concentrated and/or additional partial uniform loads such as, but not limited to, heavier floor coverings, kitchen islands, or partition walls, may increase dead load beyond the limit of these tables. Specific deflection limits may also apply depending upon the type of floor covering. Such applications are beyond the scope of these tables and must be analysed individually.
- The subfloor shall be CSA or APA rated, Canadian Softwood Plywood (CSP), Douglas Fir Plywood (DFP) or Oriented Strand Board (OSB).
- Subfloor adhesive shall comply with CGSB standard CAN-CGSB 71.26-M88 "Adhesive for Field-gluing Plywood to Lumber Framing for Floor Systems" or APA Performance Specification AFG-01.
- It may be possible to exceed the limitations of these tables by analysing a specific application with Boise Cascade BC Calc® or BC Framer® Software.
- Floor tile will increase the dead load and specific deflection limits may apply.

- For continuous spans over intermediate bearings, the shortest span shall not be less than 50% of the longest adjacent span. The end of the short span should be anchored to resist the uplift equal to:

Uplift = $L_2 \times (\text{factor}_1 \times W_{FD} - W_{FL}) / \text{factor}_2$, where:

W_{FD} = Factored dead load (lb/ft)

$\text{Factor}_1 = 4a^2 + 3a^3 - 1$

W_{FL} = Factored live load (lb/ft)

$\text{Factor}_2 = 8a(1+a)$

L_1 = Length of shorter span (ft)

a = Short span/long span

L_2 = Length of longer span (ft)

Short/Long span ratio = a	0.50	0.60	0.70	0.80	0.90	1.00
factor ₁	0.38	1.09	1.99	3.10	4.43	6.00
factor ₂	6.00	7.68	9.52	11.52	13.68	16.00

Actual Deflection Based on Span and Limit

Deflection limit	15'	17'	19'	21'	25'	30'	35'
L/360	0.50"	0.57"	0.63"	0.70"	0.83"	1.00"	1.17"
L/240	0.75"	0.85"	0.95"	1.05"	1.25"	1.50"	1.75"

Floor Framing

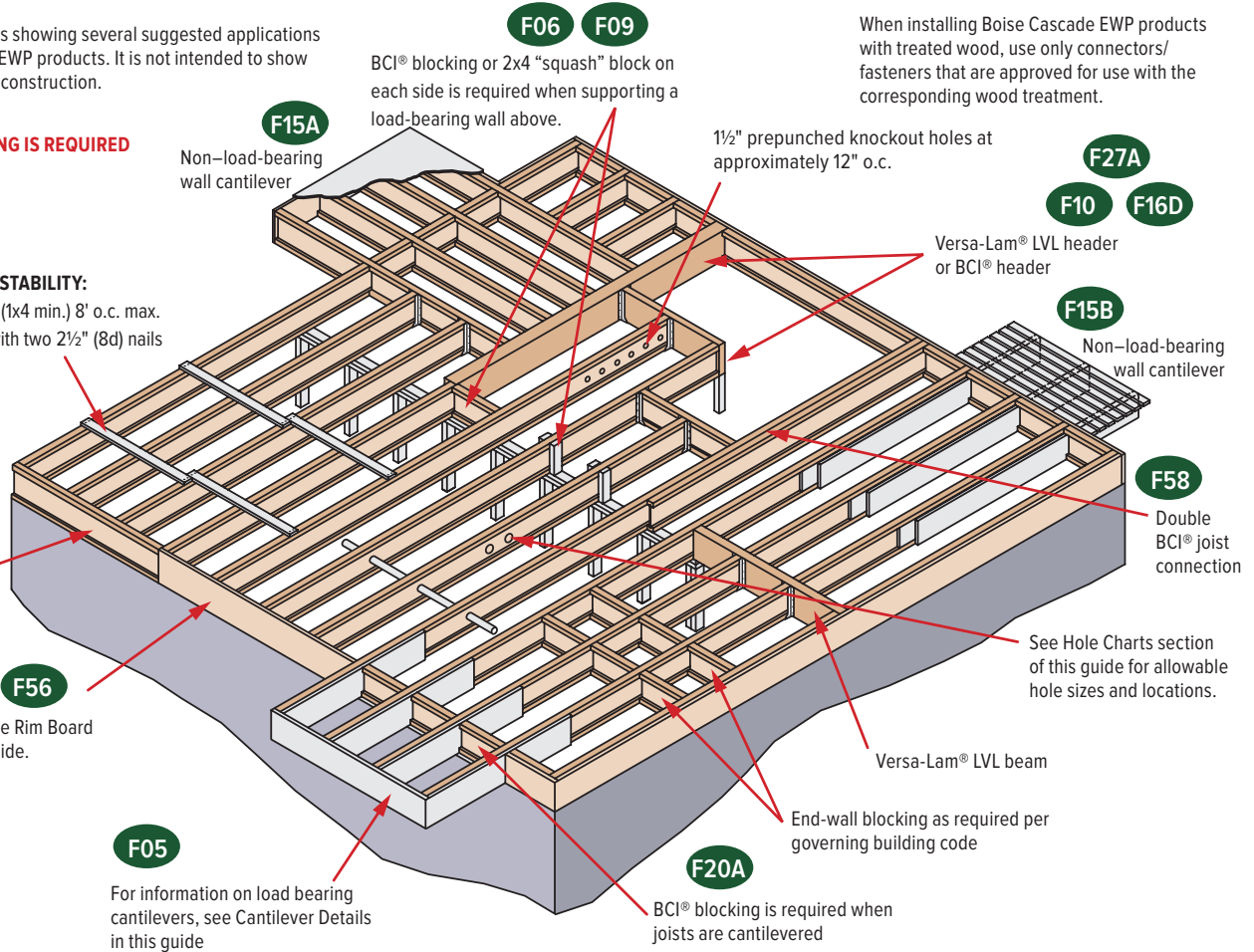
The illustration below is showing several suggested applications for the Boise Cascade EWP products. It is not intended to show an actual house under construction.

NO MIDSPAN BRIDGING IS REQUIRED FOR BCI® JOISTS

FOR INSTALLATION STABILITY:

Temporary strut lines (1x4 min.) 8' o.c. max. Fasten at each joist with two 2½" (8d) nails minimum.

Dimension lumber is not suitable for use as a rim board in BCI® floor systems.



SAFETY WARNING

DO NOT ALLOW WORKERS ON BCI® JOISTS UNTIL ALL HANGERS, BCI® RIM JOISTS, RIM BOARDS, BCI® BLOCKING PANELS, X-BRACING AND TEMPORARY 1x4 STRUT LINES ARE INSTALLED AS SPECIFIED BELOW. SERIOUS ACCIDENTS CAN RESULT FROM INSUFFICIENT ATTENTION TO PROPER BRACING DURING CONSTRUCTION. ACCIDENTS CAN BE AVOIDED UNDER NORMAL CONDITIONS BY FOLLOWING THESE GUIDELINES:

- ▶ Build a braced end wall at the end of the bay, or permanently install the first eight feet of BCI® joists and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of BCI® joists at the end of the bay.
- ▶ All rim joists, rim boards, x-bracing, blocking panels and hangers must be completely installed and properly nailed as each BCI® joist is set.
- ▶ Install temporary 1x4 strut lines at 8' on-center or closer as additional BCI® joists are set. Nail the strut lines to the sheathed area or braced end wall, and to each BCI® joist with two 2½" (8d) nails.
- ▶ The ends of cantilevers must be temporarily secured by strut lines on both the top and bottom flanges.
- ▶ Straighten the BCI® joists to within ½" of true alignment before attaching strut lines and sheathing.
- ▶ Remove the temporary strut lines only as required to install the permanent sheathing.
- ▶ Failure to install temporary bracing may result in sideways buckling or roll-over under light construction loads.
- ▶ Do not stack construction materials (sheathing, drywall, etc.) in the middle of BCI® joist spans. Contact Boise Cascade EWP Engineering for proper storage and shoring information.

Nailing Requirements

- ▶ **BCI® rim joist, rim board or closure panel to BCI® joist:**
 - Rims or closure panel 1½" thick and less: Two 2½" (8d) nails, one each in the top and bottom flange.
 - BCI® 4500s/5000s rim joist: Two 3" (10d) nails, one each in the top and bottom flange.
 - BCI® 6000s/60s rim joist: Two 3½" (16d) nails, one each in the top and bottom flange.
 - BCI® 6500s/90s rim joist: Toe-nail top flange to rim joist with Two 3" (10d) nails, one each side of flange.
- ▶ **BCI® rim joist, rim board or BCI® blocking panel to support**
 - Min. 2½" (8d) nails at 6" o.c. per NBCC. When used for shear transfer, connect as specified by the design professional of record.
- ▶ **BCI® joist to support:**
 - Two 2½" (8d) nails, one on each side of the web, placed 1½" minimum from the end of the BCI® joist to limit splitting.
- ▶ **Sheathing to BCI® joist:**
 - Prescriptive nailing for residential floor sheathing requires 2½" (8d) common nails at 6" o.c. at edges and 12" o.c. in the field as per code.
 - Maximum nail spacing for full lateral stability is 18" for BCI® 4500s and 5000s, 24" for larger BCI® joist series.
 - 14 gauge staples may be substituted for 2½" (8d) nails if the staples penetrate at least 1" into the joist.
 - Wood screws may be acceptable, contact local building official and/or Boise Cascade EWP Engineering for further information.

Lateral Support

- ▶ BCI® joists shall be laterally supported at the ends with hangers, BCI rim joists, rim board or BCI blocking panels. BCI® blocking panels or rim board are required at cantilever supports.
- ▶ Blocking may be required at intermediate bearings for floor diaphragm as per code, consult local building official.

Minimum Bearing Length For BCI® Joists

- ▶ 1½" is required at end supports. 3½" is required at cantilever and intermediate supports.
- ▶ Longer bearing lengths allow higher reaction values. Refer to the building code evaluation report or the BC Calc® software.

Web Stiffeners

- ▶ See **Web Stiffener Requirements** on page 10.

PROTECT BCI® JOISTS FROM THE WEATHER

BCI® joists are intended only for applications that provide permanent protection from the weather. Product bundles should be covered and stored off of the ground on stickers. Also see Product Storage and Handling on page 2.

Floor Framing Details

Additional floor framing details are available in BC Framer® software

End Bearing Details

F07

Dimension lumber is not suitable for use as rim board with BCI® joists.

Rim board: Nail to BCI® joists with 2½" (8d) nail into each flange.

F07A

Dimension lumber is not suitable for use as rim board with BCI® joists.

Blocking may be required perpendicular to wall, consult design professional of record and/or local building official.

F01

BCI® joist blocking

F02

BCI® rim joist

BCI® 90s rim joist requires 2x6 wall for minimum bearing

F27A

Top flange or face mount joist hanger

Versa-Lam® LVL

F52

One 2½" (8d) nail each side at bearing

1½" minimum bearing length

To limit splitting flange, start nails at least 1½" from end. Nails may need to be driven at an angle to limit splitting of bearing plate.

F08

Solid block all posts from above to bearing below.

F03

BCI® rim joist

BCI® floor joist must be designed to carry wall above when not stacked over wall below.

Blocking required underneath braced wall panels and shear walls. Consult design professional of record.

Intermediate Bearing Details

F05

Sheathing or rim board closure

BCI® joist blocking required for cantilever

For load bearing cantilever, see pages 12 and 13. Uplift on backspan shall be considered in all cantilever designs.

F06

For load bearing wall above (stacked over wall below)

BCI® joist blocking

F09

Blocking may be required. Consult design professional of record and/or local building official.

Load bearing wall above (stacked over wall below)

1/16" gap

2x block: nail with one 3" (10d) nail into each flange

F10

Backer block (minimum 12" wide). Nail with ten 3" (10d) nails.

Joist hanger

Filler block. Nail with ten 3" (10d) nails.

A backer block is required where top flange hanger load exceeds 350 lbs. All face mount hangers require backer blocks on both sides of the supporting joist's web.

For top flange hangers install tight to top flange. For face mount hangers, install tight to the bottom flange.

F28

BCI® joist or rim board blocking, nail per governing code.

Intermediate bearing

Joist blocking may be required in seismic areas for floor diaphragm strength. X-bracing is allowed as blocking only if the supporting wall is not a braced or shear wall and there is no wall above.

F58

Double BCI® joist connection filler block (if required)

Web filler nailing: 12" o.c.

- Filler block not required when all loads are top loaded and evenly applied to each ply (except BCI® 90). Side loads and/or uneven top loads require filler block.
- See Boise Cascade Technical Note IJ-13 for further information.
- Fasten floor sheathing to each ply per diaphragm nailing schedule.

Double Squash Block Vertical Load (lb/ft)

Size	Joist Spacing			
	12"	16"	19.2"	24"
2x4	6,460	4,840	4,030	3,230
2x6	10,140	7,600	6,330	5,070

► Squash blocks must be in full contact with upper floor and lower wall plate.

► Capacities shown are for double squash blocks at each joist, SPF or better.

Backer and Filler Block Dimensions

Series	Backer Block Thickness	Filler Block Thickness
4500s	5/8" or 3/4" wood panels	Two 5/8" wood panels or 2 x _
5000s	3/4" or 7/8" wood panels	Two 3/4" wood panels or 2 x _
6000s	1 1/8" or two 1/2" wood panels	2 x _ + 7/16" or 1/2" wood panel
6500s	1 1/8" or two 5/8" wood panels	2 x _ + 5/8" or 3/4" wood panel
60s	1 1/8" or two 1/2" wood panels	2 x _ + 7/16" or 1/2" wood panel
90s	2 x _ lumber	Double 2 x _ lumber

► Cut backer and filler blocks to a maximum depth equal to the web depth minus 1/4" to avoid a forced fit.

BCI® Rim Joists and Blocking

Depth	Series	Maximim Vertical Load Transfer (PLF)	
		No W.S. (1)	W.S. (2)
9 1/2"	4500s, 5000s, 6000s, 6500s	3,300	N/A
11 1/8"	4500s, 5000s, 6000s, 6500s	3,100	N/A
	60s, 90s	3,600	N/A
14"	4500s, 5000s, 6000s, 6500s	2,900	N/A
	60s, 90s	3,450	N/A
16"	4500s, 6000s, 6500s	2,750	3,600
	60s, 90s	3,300	3,900

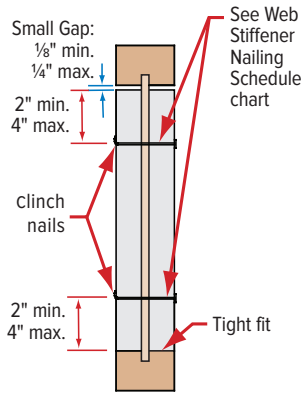
(1) No web stiffeners required.

(2) Web stiffeners required at each end of blocking panel, values not applicable for rim joists.

N/A = Not applicable

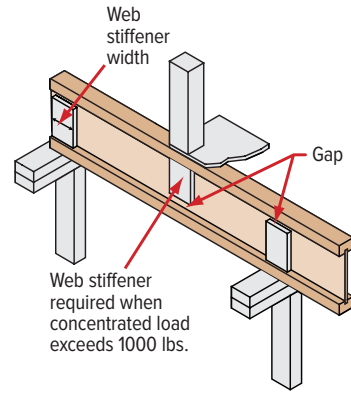
Web Stiffener Requirements

F16E



See Web Stiffener Nailing Schedule chart

Web stiffeners applied to both sides of the joist web.



Web Stiffener Nailing Schedule

BCI® Joist		Bearing Location	
Series	Depth	End	Intermediate
4500s	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
5000s	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6000s	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6500s	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
60s	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
90s	11⅞"	3-16d	3-16d
	14"	5-16d	5-16d
	16"	6-16d	6-16d

Web Stiffener Specifications

BCI® Joist Series	For Structural Capacity (Min. Thick)	Lateral Restraint in Hanger	Minimum Width
4500s	5/8"	5/8"	2⅝"
5000s	5/8"	3/4"	2⅝"
6000s	3/4"	7/8"	2⅝"
6500s	3/4"	1" or 1⅛"	2⅝"
60s	3/4"	7/8"	2⅝"
90s	2x4 lumber (vertical)		

NOTES

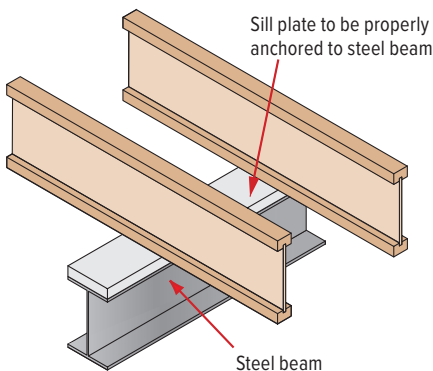
Web stiffeners are optional except as noted below.

- Web stiffeners are always required:
 - in hangers that do not extend up to support the top flange of the BCI® joist.
 - under concentrated loads that exceed 1,000 pounds. Install the web stiffeners snug to the top flange in this situation. Follow the nailing schedule for intermediate bearings.
 - in certain roof applications. See Roof Framing Details in this guide.
- Web stiffeners may be required with sloped or skewed hangers or to achieve uplift values. Refer to the hanger manufacturer's installation requirements.
- **For BCI® 90s only:** Web stiffeners may be cut from structural rated wood panels, engineered rim board or 2x lumber.
- **For structural capacity:** Web stiffeners may be used to increase allowable reaction values. See the Factored Resistances section of this guide or use the BC Calc® software.

Connection Details

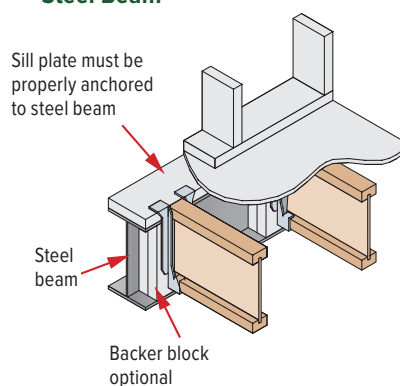
F15D

Connection on Steel Beam



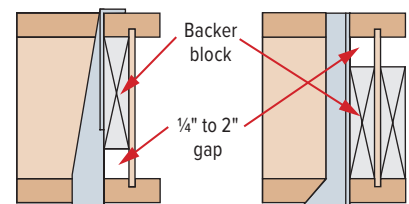
F15E

Connection with Hanger on Steel Beam



F16D

Hanger Connections to BCI® Headers



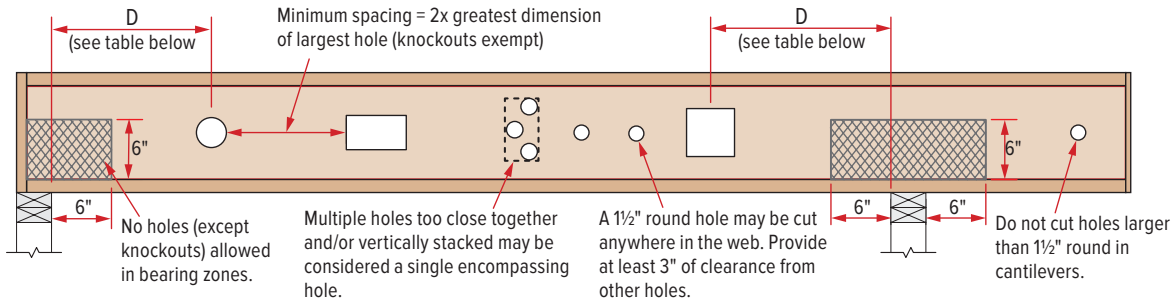
Top Mount

Backer block shall be tight to bottom of top flange with ¼" to 2" gap at top of bottom flange.

Face Mount




Backer block shall be tight to top of bottom flange with ¼" to 2" gap at bottom of top flange.

Hole Charts for Residential Applications (40/15)



BCI® joists are manufactured with 1½" round perforated knockouts in the web at approximately 12" on center. Minimum distance from support, listed in table below, is required for all holes greater than 1½".

Minimum Distance (D) From Inside Face of Any Support To Centerline Of Hole

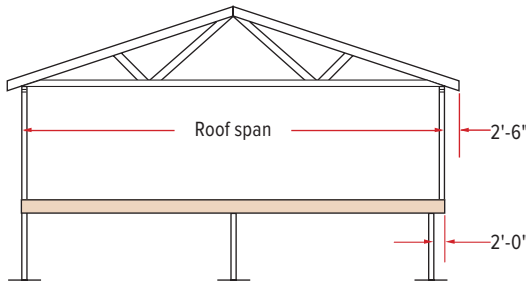
	Span	9½" Joist Depth				11⅞" Joist Depth				14" Joist Depth				16" Joist Depth			
		3"	4"	5"	7"	3"	6"	8"	9½"	3"	6"	9"	11½"	6"	9"	11"	13.5"
Round Holes 	8'	0'-8"	0'-8"	0'-9"	0'-11"	0'-8"	0'-9"	0'-10"	0'-11"	0'-8"	0'-9"	0'-11"	1'-0"	0'-9"	0'-11"	1'-0"	1'-1"
	10'	0'-8"	0'-8"	0'-9"	2'-0"	0'-8"	0'-9"	0'-10"	1'-11"	0'-8"	0'-9"	0'-11"	1'-4"	0'-9"	0'-11"	1'-0"	1'-1"
	12'	0'-8"	0'-8"	0'-9"	3'-2"	0'-8"	0'-9"	1'-1"	3'-1"	0'-8"	0'-9"	0'-11"	2'-6"	0'-9"	0'-11"	1'-0"	2'-2"
	14'	0'-8"	0'-8"	1'-1"	4'-5"	0'-8"	0'-9"	2'-2"	4'-4"	0'-8"	0'-9"	0'-11"	3'-8"	0'-9"	0'-11"	1'-0"	3'-4"
	16'	0'-8"	0'-8"	2'-2"	5'-7"	0'-8"	0'-9"	3'-4"	5'-6"	0'-8"	0'-9"	1'-8"	4'-10"	0'-9"	0'-11"	1'-7"	4'-6"
	18'	0'-8"	1'-9"	3'-3"	6'-10"	0'-8"	1'-10"	4'-6"	6'-9"	0'-8"	0'-9"	2'-9"	6'-1"	0'-9"	0'-11"	2'-8"	5'-9"
	20'	1'-3"	2'-10"	4'-5"	8'-1"	0'-8"	2'-11"	5'-8"	8'-0"	0'-8"	0'-9"	3'-11"	7'-4"	0'-9"	1'-7"	3'-10"	6'-11"
	22'	2'-4"	3'-11"	5'-7"	9'-5"	0'-8"	4'-0"	6'-10"	9'-3"	0'-8"	1'-5"	5'-1"	8'-7"	0'-9"	2'-8"	5'-0"	8'-2"
	24'	3'-5"	5'-1"	6'-9"	10'-8"	1'-3"	5'-2"	8'-1"	10'-7"	0'-8"	2'-6"	6'-3"	9'-10"	0'-9"	3'-9"	6'-2"	9'-5"
	26'	-	-	-	-	2'-4"	6'-4"	9'-4"	11'-10"	0'-8"	3'-7"	7'-5"	11'-1"	1'-7"	4'-11"	7'-4"	10'-8"
	28'	-	-	-	-	3'-5"	7'-6"	10'-7"	13'-2"	1'-2"	4'-8"	8'-7"	12'-4"	2'-8"	6'-1"	8'-6"	12'-0"
	30'	-	-	-	-	-	-	-	-	2'-3"	5'-10"	9'-10"	13'-8"	3'-9"	7'-3"	9'-9"	13'-3"
	32'	-	-	-	-	-	-	-	-	3'-4"	7'-0"	11'-1"	14'-11"	4'-10"	8'-5"	11'-0"	14'-6"
	34"	-	-	-	-	-	-	-	-	-	-	-	-	6'-0"	9'-7"	12'-2"	15'-10"
Square Holes 	Span	3"	4"	5"	7"	3"	6"	8"	9.5"	3"	6"	9"	11"	6"	9"	11"	13"
	8'	0'-8"	0'-8"	0'-9"	1'-2"	0'-8"	0'-9"	0'-10"	1'-9"	0'-8"	0'-9"	0'-11"	1'-8"	0'-9"	0'-11"	1'-0"	2'-3"
	10'	0'-8"	0'-8"	0'-9"	2'-3"	0'-8"	0'-9"	1'-7"	2'-11"	0'-8"	0'-9"	1'-0"	2'-9"	0'-9"	0'-11"	1'-7"	3'-5"
	12'	0'-8"	0'-8"	1'-6"	3'-5"	0'-8"	1'-0"	2'-8"	4'-1"	0'-8"	0'-9"	2'-1"	3'-11"	0'-9"	1'-1"	2'-9"	4'-7"
	14'	0'-9"	1'-8"	2'-7"	4'-8"	0'-8"	2'-0"	3'-10"	5'-4"	0'-8"	0'-9"	3'-3"	5'-2"	0'-9"	2'-1"	3'-10"	5'-10"
	16'	1'-9"	2'-9"	3'-9"	5'-10"	0'-8"	3'-2"	5'-0"	6'-7"	0'-8"	1'-9"	4'-5"	6'-5"	0'-9"	3'-3"	5'-1"	7'-1"
	18'	2'-11"	3'-10"	4'-11"	7'-1"	1'-8"	4'-3"	6'-3"	7'-10"	0'-8"	2'-10"	5'-7"	7'-8"	1'-9"	4'-4"	6'-3"	8'-5"
	20'	4'-0"	5'-0"	6'-1"	8'-4"	2'-9"	5'-6"	7'-5"	9'-1"	1'-5"	4'-0"	6'-10"	8'-11"	2'-10"	5'-4"	7'-6"	9'-8"
	22'	5'-2"	6'-2"	7'-3"	9'-7"	3'-10"	6'-8"	8'-8"	10'-5"	2'-6"	5'-1"	8'-0"	10'-2"	4'-0"	6'-9"	8'-9"	11'-0"
	24'	6'-4"	7'-5"	8'-6"	10'-11"	5'-0"	7'-10"	10'-0"	11'-8"	3'-7"	6'-3"	9'-3"	11'-6"	5'-1"	7'-11"	10'-0"	*
	26'	-	-	-	-	6'-2"	9'-1"	11'-3"	13'-0"	4'-8"	7'-6"	10'-6"	12'-9"	6'-3"	9'-2"	11'-3"	*
	28'	-	-	-	-	7'-4"	10'-4"	12'-6"	*	5'-10"	8'-8"	11'-9"	*	7'-5"	10'-5"	12'-6"	*
	30'	-	-	-	-	-	-	-	-	7'-0"	9'-10"	13'-1"	*	8'-7"	11'-8"	13'-10"	*
	32'	-	-	-	-	-	-	-	-	8'-2"	11'-1"	14'-4"	*	9'-10"	12'-11"	15'-1"	*
	34'	-	-	-	-	-	-	-	-	-	-	-	-	11'-0"	14'-2"	16'-5"	*
Rectangular Holes 	Span	6"x8"	6"x10"	6"x12"	6"x14"	7"x10"	7"x12"	7"x14"	7"x16"	8"x10"	8"x14"	8"x16"	8"x18"	8"x10"	8"x14"	8"x16"	8"x18"
	8'	1'-3"	1'-11"	2'-6"	3'-3"	0'-11"	1'-7"	2'-3"	3'-0"	0'-11"	1'-7"	2'-4"	3'-1"	0'-11"	1'-1"	1'-4"	2'-2"
	10'	2'-5"	3'-1"	3'-9"	4'-6"	2'-0"	2'-8"	3'-5"	4'-2"	1'-2"	2'-8"	3'-6"	4'-4"	0'-11"	1'-8"	2'-6"	3'-4"
	12'	3'-7"	4'-3"	5'-0"	5'-9"	3'-2"	3'-11"	4'-8"	5'-5"	2'-3"	3'-10"	4'-8"	5'-7"	1'-2"	2'-9"	3'-7"	4'-6"
	14'	4'-9"	5'-6"	6'-3"	7'-0"	4'-4"	5'-1"	5'-11"	6'-9"	3'-5"	5'-0"	5'-11"	6'-10"	2'-3"	3'-11"	4'-10"	5'-9"
	16'	6'-0"	6'-9"	7'-6"	*	5'-6"	6'-4"	7'-2"	8'-0"	4'-7"	6'-3"	7'-2"	*	3'-5"	5'-1"	6'-0"	7'-0"
	18'	7'-3"	8'-0"	8'-9"	*	6'-9"	7'-7"	8'-5"	*	5'-9"	7'-6"	8'-5"	*	4'-6"	6'-4"	7'-3"	8'-3"
	20'	8'-6"	9'-3"	*	*	8'-0"	8'-10"	9'-8"	*	7'-0"	8'-9"	9'-9"	*	5'-8"	7'-6"	8'-6"	9'-6"
	22'	9'-9"	10'-7"	*	*	9'-3"	10'-1"	11'-0"	*	8'-2"	10'-1"	11'-0"	*	6'-11"	8'-9"	9'-9"	10'-10"
	24'	11'-0"	11'-10"	*	*	10'-6"	11'-5"	*	*	9'-5"	11'-4"	*	*	8'-1"	10'-0"	11'-0"	*
	26'	-	-	-	-	11'-10"	12'-8"	*	*	10'-8"	12'-7"	*	*	9'-4"	11'-4"	12'-4"	*
	28'	-	-	-	-	13'-1"	14'-0"	*	*	12'-0"	13'-11"	*	*	10'-7"	12'-7"	13'-7"	*
	30'	-	-	-	-	-	-	-	-	13'-3"	*	*	*	11'-10"	13'-10"	14'-11"	*
	32'	-	-	-	-	-	-	-	-	14'-6"	*	*	*	13'-1"	15'-2"	*	*
	34'	-	-	-	-	-	-	-	-	-	-	-	*	14'-4"	16'-5"	*	*

* = Holes may be acceptable, contact your local distributor.

NOTES

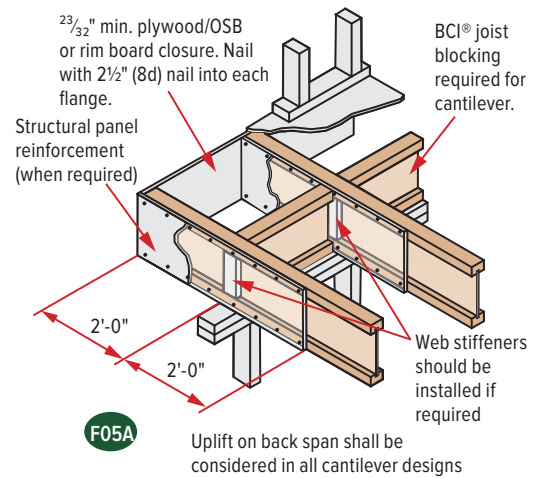
- Tables assume
 - simple span application
 - uniformly loaded joists
 - maximum loads of 40 PSF live and 15 PSF dead.
- Hole may be positioned vertically anywhere in the web.
- For other load conditions or hole sizes, contact your local distributor.
- It may be possible to exceed the limitations of those tables by analysing a specific situation with the BC Calc® Software.

Reinforced Load-Bearing Cantilever



Plywood/OSB Reinforcement (If required per table on page 13 or per BC Calc® analysis)

- $\frac{23}{32}$ " min. x 48" long plywood/OSB-rated sheathing must match the full depth of the BCI® joist. Nail to the BCI® joist with $\frac{1}{2}$ " (8d) nails at 6" o.c. When reinforcing both sides, stagger nails to limit splitting. Install with face grain horizontal.
- These requirements assume a 100 PLF wall load is applied to the BCI® joist. Additional support may be required for other loadings; see BC Calc® software.
- For reinforcement requirements on BCI® joist depths greater than 16", contact Boise Cascade EWP Engineering.

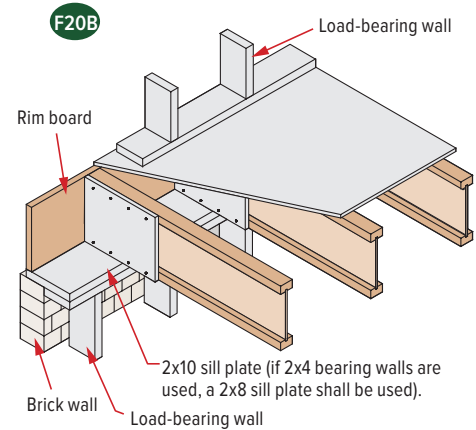
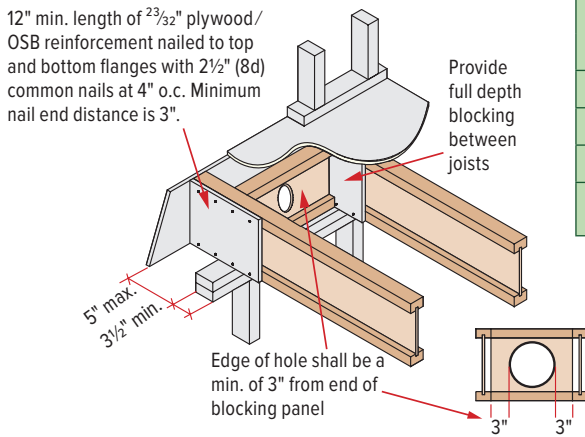


- The tables and details on pages 12 and 13 indicate the type of reinforcements, if any, that are required for load-bearing cantilevers up to a maximum length of 2'-0". Cantilevers longer than 2'-0" cannot be reinforced.
- Longer cantilevers with lower loads may be allowable without reinforcement.** Analyse specific applications with the BC Calc® software.

Brick Ledge Cantilever

Max. Factored Vertical Load (PLF)
for off-set bearing wall

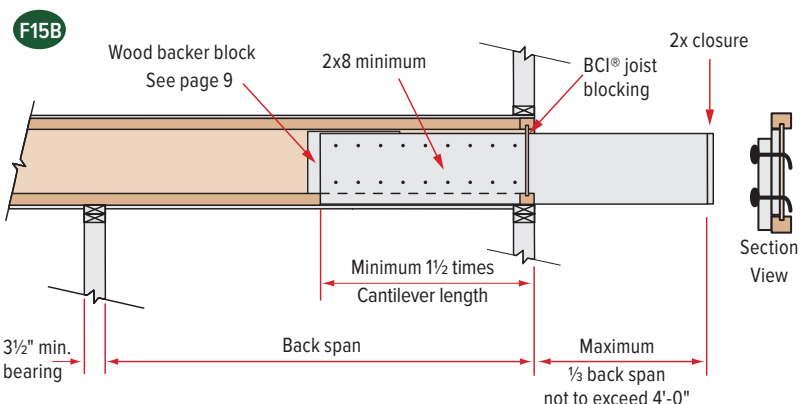
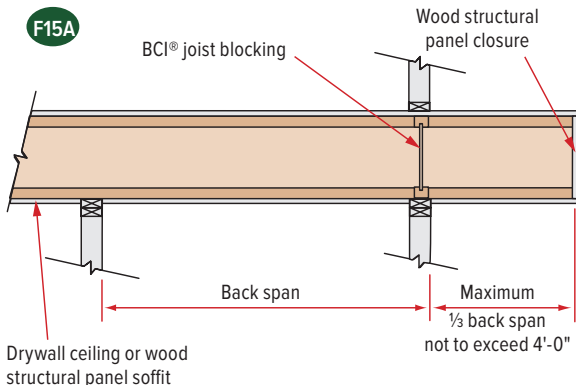
Joist Depth	Joist o.c. spacing			
	12"	16"	19.2"	24"
9½"	2,846	2,135	1,779	1,423
11⅞"	3,122	2,342	1,951	1,561
14"	3,450	2,588	2,156	1,725
16" or deeper	3,465	2,599	2,166	1,733



Non-Load-Bearing Wall Cantilever

CAUTION: BCI® Joists are intended only for applications that provide permanent protection from the weather.

Fasten the 2x8 minimum to the BCI® joist by nailing through the backer block and joist web with two rows of 3" (10d) nails at 6" on center. With BCI® 90s joists use 3½" (16d) nails. Clinch all nails.



NOTES

- These details apply to cantilevers with uniform loads only.
- It may be possible to exceed the limitations of these details by analysing a specific application with the BC Calc software.

Reinforced Load-Bearing Cantilever Tables

Depth	Series	Roof Truss Span	Specified Snow Load (PSF)								
			30			40			50		
			Joist Spacing (inches)								
			16	19.2	24	16	19.2	24	16	19.2	24
9 1/2"	4500s	24'	0	0	X	0	0	X	0	X	X
		26'	0	0	X	0	X	X	X	X	X
		28'	0	0	X	0	X	X	X	X	X
		30'	0	0	X	0	X	X	X	X	X
		32'	0	WS	X	X	X	X	X	X	X
		34'	0	X	X	X	X	X	X	X	X
		36'	0	X	X	X	X	X	X	X	X
		38'	0	X	X	X	X	X	X	X	X
		40'	0	X	X	X	X	X	X	X	X
	42'	X	X	X	X	X	X	X	X	X	
	5000s	24'	0	0	WS	0	0	X	0	X	X
		26'	0	0	X	0	WS	X	0	X	X
		28'	0	0	X	0	WS	X	WS	X	X
		30'	0	0	X	0	X	X	1	X	X
		32'	0	WS	X	0	X	X	X	X	X
		34'	0	WS	X	WS	X	X	X	X	X
		36'	0	WS	X	WS	X	X	X	X	X
		38'	0	1	X	X	X	X	X	X	X
		40'	0	X	X	X	X	X	X	X	X
	42'	0	X	X	X	X	X	X	X	X	
	6000s	24'	0	0	0	0	0	1	0	0	X
		26'	0	0	0	0	0	X	0	1	X
		28'	0	0	WS	0	0	X	0	1	X
		30'	0	0	1	0	0	X	0	X	X
		32'	0	0	1	0	1	X	0	X	X
		34'	0	0	X	0	1	X	1	X	X
		36'	0	0	X	0	1	X	1	X	X
		38'	0	0	X	0	X	X	X	X	X
		40'	0	0	X	1	X	X	X	X	X
	42'	0	1	X	1	X	X	X	X	X	
6500s	24'	0	0	0	0	0	1	0	0	X	
	26'	0	0	WS	0	0	X	0	1	X	
	28'	0	0	WS	0	0	X	0	1	X	
	30'	0	0	1	0	0	X	0	X	X	
	32'	0	0	1	0	1	X	0	X	X	
	34'	0	0	X	0	1	X	1	X	X	
	36'	0	0	X	0	1	X	1	X	X	
	38'	0	0	X	0	X	X	1	X	X	
	40'	0	0	X	1	X	X	2	X	X	
42'	0	1	X	1	X	X	X	X	X		
11 7/8"	4500s	24'	0	0	WS	0	0	1	0	WS	X
		26'	0	0	WS	0	0	X	0	WS	X
		28'	0	0	WS	0	WS	X	0	X	X
		30'	0	0	WS	0	WS	X	0	X	X
		32'	0	0	1	0	WS	X	WS	X	X
		34'	0	0	X	0	1	X	1	X	X
		36'	0	WS	X	0	X	X	X	X	X
		38'	0	WS	X	WS	X	X	X	X	X
		40'	0	WS	X	WS	X	X	X	X	X
	42'	0	1	X	1	X	X	X	X	X	
	5000s	24'	0	0	WS	0	0	1	0	WS	X
		26'	0	0	WS	0	0	1	0	WS	X
		28'	0	0	WS	0	WS	X	0	1	X
		30'	0	0	WS	0	WS	X	WS	1	X
		32'	0	0	1	0	WS	X	WS	1	X
		34'	0	0	1	0	1	X	1	X	X
		36'	0	WS	X	0	1	X	1	X	X
		38'	0	WS	X	WS	1	X	1	X	X
		40'	0	WS	X	WS	1	X	1	X	X
	42'	0	1	X	1	X	X	X	X	X	
	6000s	24'	0	0	0	0	0	WS	0	0	X
		26'	0	0	0	0	0	1	0	0	X
		28'	0	0	WS	0	0	X	0	1	X
		30'	0	0	WS	0	0	X	0	1	X
		32'	0	0	WS	0	0	X	0	1	X
		34'	0	0	1	0	1	X	0	X	X
		36'	0	0	X	0	1	X	1	X	X
		38'	0	0	X	0	1	X	1	X	X
		40'	0	0	X	0	1	X	1	X	X
	42'	0	WS	X	0	X	X	1	X	X	

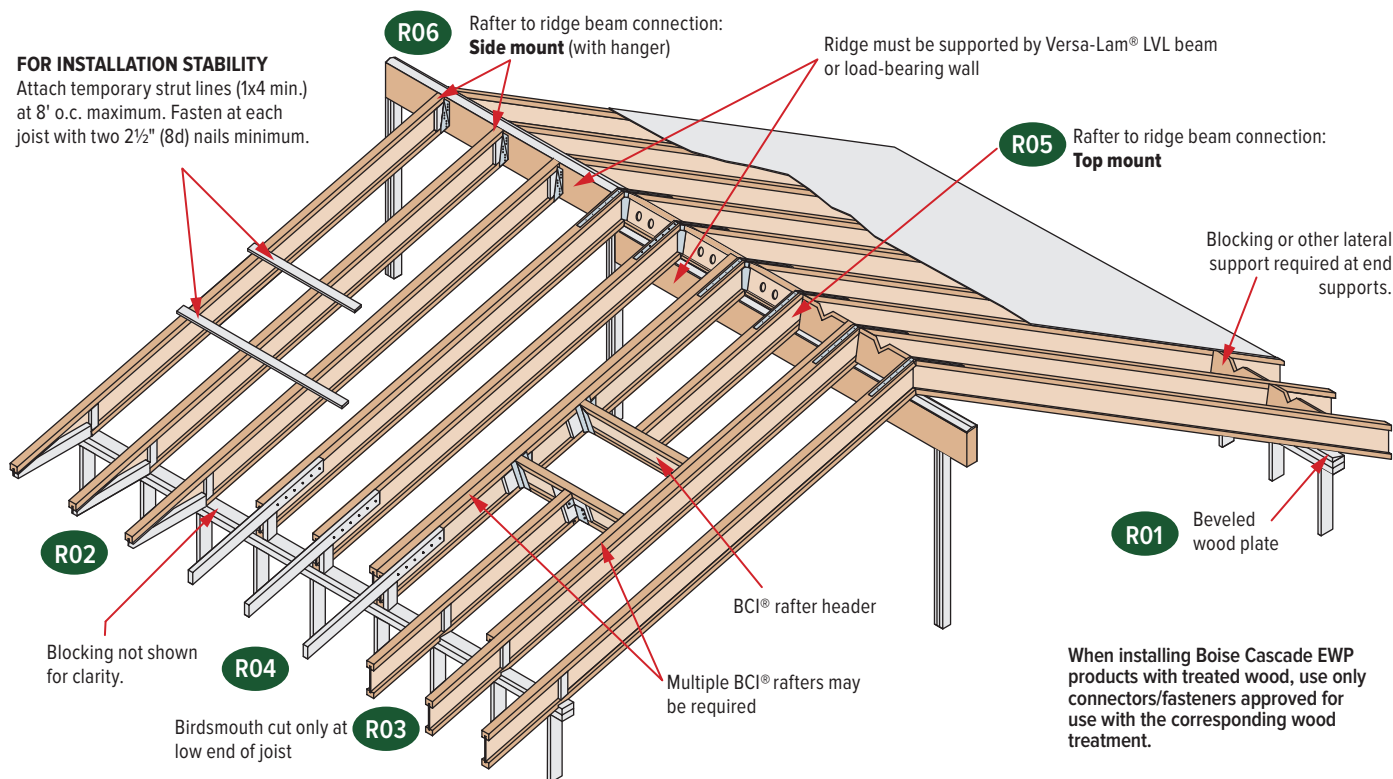
Depth	Series	Roof Truss Span	Specified Snow Load (PSF)									
			30			40			50			
			Joist Spacing (inches)									
			16	19.2	24	16	19.2	24	16	19.2	24	
11 7/8"	6500s	24'	0	0	0	0	0	WS	0	0	X	
		26'	0	0	0	0	0	1	0	WS	X	
		28'	0	0	WS	0	0	X	0	1	X	
		30'	0	0	WS	0	0	X	0	1	X	
		32'	0	0	WS	0	0	X	0	1	X	
		34'	0	0	1	0	1	X	0	X	X	
		36'	0	0	X	0	1	X	1	X	X	
		38'	0	0	X	0	1	X	1	X	X	
		40'	0	0	X	0	1	X	1	X	X	
		42'	0	WS	X	0	X	X	1	X	X	
		60s	24'	0	0	0	0	0	WS	0	0	X
			26'	0	0	0	0	0	1	0	WS	X
	28'		0	0	WS	0	0	X	0	1	X	
	30'		0	0	WS	0	0	X	0	1	X	
	32'		0	0	WS	0	WS	X	0	1	X	
	34'		0	0	1	0	1	X	0	X	X	
	36'		0	0	X	0	1	X	1	X	X	
	38'		0	0	X	0	1	X	1	X	X	
	40'		0	0	X	0	X	X	1	X	X	
	42'		0	WS	X	0	X	X	2	X	X	
	90s		24'	0	0	0	0	0	0	0	0	WS
			26'	0	0	0	0	0	0	0	0	WS
		28'	0	0	0	0	0	0	0	0	WS	
		30'	0	0	0	0	0	WS	0	0	1	
32'		0	0	0	0	0	WS	0	0	2		
34'		0	0	0	0	0	WS	0	0	2		
36'		0	0	0	0	0	1	0	WS	X		
38'		0	0	WS	0	0	1	0	1	X		
40'		0	0	WS	0	0	2	0	1	X		
42'		0	0	WS	0	0	2	0	1	X		
14"		4500s	24'	0	0	WS	0	0	WS	0	WS	1
			26'	0	0	WS	0	0	WS	0	WS	X
	28'		0	0	WS	0	WS	1	0	WS	X	
	30'		0	0	WS	0	WS	1	0	WS	X	
	32'		0	0	WS	0	WS	X	WS	1	X	
	34'		0	0	WS	0	WS	X	WS	1	X	
	36'		0	0	WS	0	WS	X	WS	X	X	
	38'		0	WS	1	0	1	X	WS	X	X	
	40'		0	WS	1	WS	1	X	1	X	X	
	42'		0	WS	X	WS	1	X	1	X	X	
	5000s		24'	0	0	WS	0	0	WS	0	WS	1
			26'	0	0	WS	0	0	WS	0	WS	X
		28'	0	0	WS	0	WS	1	0	WS	X	
		30'	0	0	WS	0	WS	1	0	WS	X	
		32'	0	0	WS	0	WS	X	WS	1	X	
		34'	0	0	WS	0	WS	X	WS	1	X	
		36'	0	WS	WS	0	WS	X	WS	1	X	
		38'	0	WS	1	0	1	X	WS	X	X	
		40'	0	WS	X	WS	1	X	1	X	X	
		42'	0	WS	X	WS	1	X	1	X	X	
		6000s	24'	0	0	0	0	0	WS	0	0	WS
			26'	0	0	0	0	0	WS	0	0	X
	28'		0	0	WS	0	0	WS	0	WS	X	
	30'		0	0	WS	0	0	WS	0	WS	X	
	32'		0	0	WS	0	0	1	0	WS	X	
	34'		0	0	WS	0	WS	X	0	1	X	
	36'		0	0	WS	0	WS	X	0	1	X	
	38'		0	0	WS	0	WS	X	WS	1	X	
	40'		0	0	1	0	WS	X	WS	X	X	
	42'		0	0	X	0	1	X	1	X	X	
	6500s		24'	0	0	0	0	0	WS	0	0	WS
			26'	0	0	0	0	0	WS	0	0	X
		28'	0	0	WS	0	0	WS	0	WS	X	
		30'	0	0	WS	0	0	WS	0	WS	X	
		32'	0	0	WS	0	0	X	0	WS	X	
		34'	0	0	WS	0	WS	X	0	1	X	
36'		0	0	WS	0	WS	X	0	1	X		
38'		0	0	WS	0	WS	X	WS	X	X		
40'		0	0	1	0	WS	X	WS	X	X		
42'		0	0	X	0	1	X	1	X	X		

Depth	Series	Roof Truss Span	Specified Snow Load (PSF)									
			30			40			50			
			Joist Spacing (inches)									
			16	19.2	24	16	19.2	24	16	19.2	24	
14"	60s	24'	0	0	0	0	0	WS	0	0	WS	
		26'	0	0	0	0	0	WS	0	WS	X	
		28'	0	0	0	WS	0	WS	0	WS	X	
		30'	0	0	WS	0	0	WS	0	WS	X	
		32'	0	0	WS	0	0	X	0	WS	X	
		34'	0	0	WS	0	WS	X	0	1	X	
		36'	0	0	WS	0	WS	X	WS	1	X	
		38'	0	0	0	WS	0	WS	X	X	X	
		40'	0	0	1	0	WS	X	WS	X	X	
	42'	0	WS	X	0	1	X	1	X	X		
	90s	24'	0	0	0	0	0	0	0	0	WS	
		26'	0	0	0	0	0	0	0	0	WS	
		28'	0	0	0	0	0	WS	0	0	WS	
		30'	0	0	0	0	0	WS	0	0	WS	
		32'	0	0	0	0	0	WS	0	0	1	
		34'	0	0	0	0	0	WS	0	WS	1	
		36'	0	0	WS	0	0	WS	0	WS	X	
		38'	0	0	0	WS	0	0	WS	0	WS	X
40'		0	0	0	WS	0	0	1	0	WS	X	
42'	0	0	0	WS	0	WS	1	0	WS	X		
16"	4500s	24'	0	0	WS	0	0	WS	0	WS	WS	
		26'	0	0	WS	0	0	WS	0	WS	1	
		28'	0	0	0	WS	0	WS	WS	0	WS	X
		30'	0	0	WS	0	WS	WS	0	WS	X	
		32'	0	0	WS	0	WS	1	WS	WS	X	
		34'	0	0	WS	0	WS	X	WS	WS	X	
		36'	0	0	WS	0	WS	X	WS	1	X	
		38'	0	WS	WS	0	WS	X	WS	1	X	
		40'	0	WS	WS	WS	WS	X	WS	X	X	
	42'	0	WS	1	WS	1	X	WS	X	X		
	6000s	24'	0	0	0	0	0	WS	0	0	WS	
		26'	0	0	0	0	0	WS	0	0	WS	
		28'	0	0	0	WS	0	0	WS	0	WS	WS
		30'	0	0	WS	0	0	WS	0	WS	X	
		32'	0	0	WS	0	0	WS	0	WS	X	
		34'	0	0	WS	0	WS	WS	0	WS	X	
		36'	0	0	WS	0	WS	X	0	WS	X	
		38'	0	0	0	WS	0	WS	X	WS	WS	X
		40'	0	0	WS	0	WS	X	WS	1	X	
	42'	0	0	0	WS	0	WS	X	WS	X	X	
	6500s	24'	0	0	0	0	0	WS	0	0	WS	
		26'	0	0	0	0	0	WS	0	0	WS	
		28'	0	0	0	WS	0	0	WS	0	WS	X
		30'	0	0	WS	0	0	WS	0	WS	X	
		32'	0	0	WS	0	0	WS	0	WS	X	
		34'	0	0	WS	0	WS	WS	0	WS	X	
		36'	0	0	WS	0	WS	X	0	WS	X	
		38'	0	0	0	WS	0	WS	X	WS	WS	X
		40'	0	0	WS	0	WS	X	WS	1	X	
	42'	0	0	0	WS	0	WS	X	WS	X	X	
	60s	24'	0	0	0	0	0	WS	0	0	WS	
		26'	0	0	0	0	0	WS	0	WS	WS	
		28'	0	0	0	WS	0	0	WS	0	WS	X
		30'	0	0	WS	0	0	WS	0	WS	X	
		32'	0	0	WS	0	WS	WS	0	WS	X	
		34'	0	0	WS	0	WS	WS	0	WS	X	
36'		0	0	WS	0	WS	X	WS	WS	X		
38'		0	0	WS	0	WS	X	WS	WS	X		
40'		0	0	WS	0	WS	X	WS	1	X		
42'	0	WS	WS	0	WS	X	WS	X	X			
90s	24'	0	0	0	0	0	0	0	0	WS		
	26'	0	0	0	0	0	0	0	0	WS		
	28'	0	0	0	0	0	0	WS	0	0	WS	
	30'	0	0	0	0	0	0	WS	0	0	WS	
	32'	0	0	0	0	0	0	WS	0	0	WS	
	34'	0	0	0	0	0	0	WS	0	WS	WS	
	36'	0	0	WS	0	0	WS	0	WS	1		
	38'	0	0	0	WS	0	0	WS	0	WS	X	
	40'	0	0	WS	0	0	WS	0	WS	X		
42'	0	0	0	WS	0	WS	WS	0	WS	X		

Roof Framing

FOR INSTALLATION STABILITY

Attach temporary strut lines (1x4 min.) at 8' o.c. maximum. Fasten at each joist with two 2½" (8d) nails minimum.



When installing Boise Cascade EWP products with treated wood, use only connectors/fasteners approved for use with the corresponding wood treatment.

SAFETY WARNING

► **DO NOT ALLOW WORKERS ON BCI® JOISTS UNTIL ALL HANGERS, BCI® RIM JOISTS, RIM BOARDS, BCI® BLOCKING PANELS, X-BRACING AND TEMPORARY 1x4 STRUT LINES ARE INSTALLED AS SPECIFIED BELOW. SERIOUS ACCIDENTS CAN RESULT FROM INSUFFICIENT ATTENTION TO PROPER BRACING DURING CONSTRUCTION. ACCIDENTS CAN BE AVOIDED UNDER NORMAL CONDITIONS BY FOLLOWING THESE GUIDELINES:**

- Build a braced end wall at the end of the bay, or permanently install the first eight feet of BCI® joists and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of BCI® joists at the end of the bay.
- All hangers, BCI® rim joists, rim boards, BCI® blocking panels, and x-bracing must be completely installed and properly nailed as each BCI® joist is set.
- Install temporary 1x4 strut lines at no more than eight feet on-center as additional BCI® joists are set. Nail the strut lines to the sheathed area, or braced end wall, and to each BCI® joist with two 2½" (8d) nails.
- The ends of cantilevers must be temporarily secured by strut lines on both the top and bottom flanges.
- Straighten the BCI® joist to within ½" of true alignment before attaching strut lines and sheathing.
- Remove the temporary strut lines only as required to install the permanent sheathing.
- Failure to install temporary bracing may result in sideways buckling or roll-over under light construction loads.

Lateral Support

- BCI® joists must be laterally supported at the end supports (including supports adjacent to overhangs) with hangers, rim board, or blocking (Versa-Lam® LVL, Boise Cascade® Rimboard, or BCI® joist).
- Metal cross bracing or other x-bracing provides adequate lateral support for BCI® joists. Consult governing building code for roof diaphragm connection provisions.

Minimum Bearing Length For BCI® Joists

- 1½" for all BCI® joists. 3½" is required at cantilever and intermediate supports.
- Longer bearing lengths allow higher reaction values. Refer to the building code evaluation report or the BC Calc® software.

Nailing Requirements

- **BCI® rim joist, rim board or closure panel to BCI® joist:**
 - Rims or closure panel 1½" thick and less: Two 2½" (8d) nails, one each in the top and bottom flange.
 - BCI® 4500s/5000s rim joist: Two 3" (10d) nails, one each in the top and bottom flange.
 - BCI® 6000s/60s rim joist: Two 3½" (16d) nails, one each in the top and bottom flange.
 - BCI® 6500s/90s rim joist: Toe-nail top flange to rim joist with two 3" (10d) nails, one each side of flange.
- **BCI® rim joist, rim board or BCI® blocking panel to support:**
 - Min. 2½" (8d) nails @ 6" o.c. per NBCC.
 - Connection per design professional of record's specification for shear transfer.
- **BCI® joist to support:**
 - Two 2½" (8d) nails, one on each side of the web, placed 1½" minimum from the end of the BCI® joist to limit splitting.
- **Sheathing to BCI® joist:**
 - Prescriptive residential roof sheathing requires 2½" (8d) common nails at 6" o.c. at edges and 12" o.c. in the field as per code.
 - Maximum nail spacing for full lateral stability is 18" for BCI® 4500s & 5000s, 24" for larger BCI® joist series.
 - 14 gauge staples may be substituted for 2½" (8d) nails if the staples penetrate at least 1" into the joist.
 - Wood screws may be acceptable, contact local building official and/or Boise Cascade EWP Engineering for further information.

Web Stiffeners

- See **Web Stiffener Requirements** on page 10.

Maximum Slope

- Unless otherwise noted, all roof details are valid for slopes of 12:12 or less.

Ventilation

- All 1½" prepunched knock-out holes (spaced at 12" o.c. along the joist) may be knocked out for cross ventilation. When designing ventilation, using deeper joists than what is structurally required may be an advantage. Consult local building officials and/or ventilation specialists for specific requirements.

Birdsmouth Cuts

- BCI® joists may be birdsmouth cut only at the low end support.
- BCI® joists with birdsmouth cuts may cantilever up to 2'-6" past the low end support.
- The bottom flange must sit fully on the support and may not overhang the inside face of the support.
- Birdsmouth cuts are NOT allowed at high end or intermediate supports.

Backer and Filler Block Dimensions

Series	Backer Block Thickness	Filler Block Thickness
4500s	5/8" or 3/4" wood panels	Two 5/8" wood panels or 2 x _
5000s	3/4" or 7/8" wood panels	Two 3/4" wood panels or 2 x _
6000s	1 1/8" or two 1/2" wood panels	2 x _ + 7/16" or 1/2" wood panel
6500s	1 1/8" or two 5/8" wood panels	2 x _ + 5/8" or 3/4" wood panel
60s	1 1/8" or two 1/2" wood panels	2 x _ + 7/16" or 1/2" wood panel
90s	2 x _ lumber	Double 2 x _ lumber

- Cut backer and filler blocks to a maximum depth equal to the web depth minus ¼" to avoid a forced fit.

Roof Framing Details

Additional roof framing details available with BC FRAMER® software

R01

2x beveled plate for slopes greater than 1/4:12

Simpson VPA or MiTek TMP connectors or equal can be used in lieu of beveled plate for slopes of 3:12 to 12:12.

R02

Rim board / Versa-Lam® LVL blocking. "V" cut 1/3 of length, 1/2 of depth.

2x4 blocking for soffit support

BCI® joist flange may be birdsmouth cut only at the low end of the joist and the cut flange must bear fully on plate; web stiffener required each side. Bottom flange shall be fully supported.

2'6" max.

R03

Rim board / Versa-Lam® LVL blocking. "V" cut 1/3 of length, 1/2 of depth.

Tight fit for lateral stability

BCI® joist flange may be birdsmouth cut only at the low end of the joist and the cut flange must bear fully on plate; web stiffener required each side.

2'6" max.

R04

10d nails at 6" o.c.

2x4 one side for 135 PLF max. 2x6 one side for 240 PLF max.

Backer block: thickness per corresponding BCI® series

2x block

BCI® blocking holes cut for ventilation

4'0" horiz.

2'6" horiz.

R05

Simpson or MiTek LSTA24 strap, nailing per governing building code

BCI® blocking holes cut for ventilation

Blocking on both sides of ridge may be required for shear transfer per design professional of record.

Double-beveled wood plate

Versa-Lam® LVL support beam

R06

Simpson or MiTek LSTA24 strap where slope exceeds 7:12 (*straps may be required for lower slopes in high-wind areas*). Nailing per building code.

Versa-Lam® LVL support beam

Simpson LSSUI or MiTek TMU hanger

Beveled web stiffener on each side

R07

Backer block (minimum 12" wide). Nail with ten 3" (10d) nails.

Joist hanger

Filler block: Nail with ten 3" (10d) nails.

Backer block required where top flange joist hanger load exceeds 250 lbs. Install tight to top flange.

R11

Double joist may be required when L exceeds rafter spacing.

Blocking as required

Nail outrigger through BCI® joist web

2" x _ outrigger notched around BCI® joist top flange. Outrigger spacing no greater than 24" o.c.

End wall

DN05

DO NOT bevel-cut joist beyond inside face of wall, except for specific conditions as shown in detail on page 14 of this guide.

BCI® Ceiling Joist with Bevel End Cut (For limited-access attics only)

CAUTION: DO NOT use BCI® joists as a collar/tension tie. Roof rafters shall be supported by ridge beam or other upper bearing support.

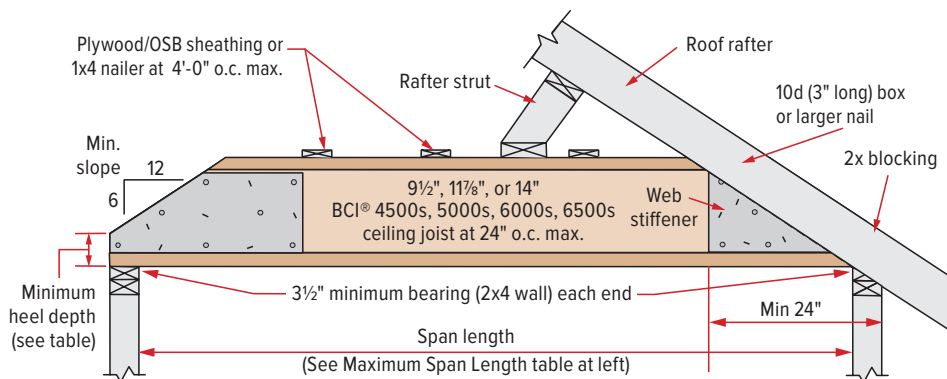
Maximum Span Lengths Without Roof Loads

9½" BCI® 4500s, 5000s, 6000s, 6500s	19'-6"
11⅞" BCI® 4500s, 5000s, 6000s, 6500s	22'-0"
14" BCI® 4500s, 5000s, 6000s, 6500s	23'-0"

► If roof loads are present, see first two notes at right.

Minimum Heel Depths

Joist Depth	End Wall	
	2 x 4	2 x 6
9½"	2½"	1½"
11⅞"	3½"	2½"
14"	4½"	3½"



Ceiling loads: Live Load 10 PSF, Dead Load 7 PSF

NOTES:

- Ceiling joist must be designed to carry all roof load transferred through rafter struts as shown.
- BCI® ceiling joist end reaction may not exceed 550 pounds.
- Minimum roof slope is 6:12.
- Detail is to be used only for ceiling joists with no access to attic space.
- Nail roof rafter to BCI® top flange with one 3" (10d) sinker or box nail.
- 1x4 nailers must be continuous and nailed to a braced end wall.
- Install a web stiffener on each side of BCI® joist at beveled ends. Nail roof rafter to BCI® joist per building code requirements for ceiling joist to roof rafter connection.

PROTECT BCI JOISTS FROM THE WEATHER

BCI joists are intended only for applications that provide permanent protection from the weather. Product bundles should be covered and stored off of the ground on stickers.

Roof Span Tables

Loads	BCI® Joist		Low Roof Slope (1/4:12 to 6:12)				High Roof Slope (< 6:12 to 12:12)			
	Series	Depth	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Dead Load = 10 PSF Snow Load = 20 PSF	4500s	9½"	23'-5"	21'-3"	19'-11"	18'-6"	21'-0"	19'-1"	17'-11"	16'-7"
		11⅞"	27'-10"	25'-3"	23'-9"	21'-3"	25'-0"	22'-8"	21'-4"	19'-9"
		14"	31'-7"	28'-8"	25'-11"	23'-2"	28'-4"	25'-9"	24'-2"	22'-5"
		16"	35'-0"	30'-5"	27'-9"	24'-9"	31'-5"	28'-6"	26'-10"	23'-10"
	5000s	9½"	24'-4"	22'-1"	20'-9"	19'-3"	21'-11"	19'-10"	18'-8"	17'-4"
		11⅞"	29'-0"	26'-4"	24'-9"	22'-11"	26'-1"	23'-8"	22'-3"	20'-7"
		14"	32'-9"	29'-9"	27'-11"	24'-11"	29'-5"	26'-9"	25'-1"	23'-3"
	6000s	9½"	25'-5"	23'-1"	21'-8"	20'-1"	22'-11"	20'-9"	19'-6"	18'-1"
		11⅞"	30'-3"	27'-5"	25'-9"	23'-11"	27'-2"	24'-8"	23'-2"	21'-6"
		14"	34'-4"	31'-2"	29'-3"	26'-10"	30'-10"	28'-0"	26'-4"	24'-5"
		16"	37'-11"	34'-5"	32'-2"	28'-9"	34'-1"	30'-11"	29'-1"	27'-0"
	6500s	9½"	26'-3"	23'-10"	22'-5"	20'-9"	23'-7"	21'-5"	20'-2"	18'-8"
		11⅞"	31'-1"	28'-3"	26'-6"	24'-7"	28'-0"	25'-4"	23'-10"	22'-1"
		14"	35'-4"	32'-1"	30'-2"	27'-11"	31'-9"	28'-10"	27'-1"	25'-2"
		16"	39'-1"	35'-5"	33'-4"	30'-3"	35'-1"	31'-10"	29'-11"	27'-9"
	60s	11⅞"	33'-4"	30'-3"	28'-5"	26'-4"	30'-0"	27'-2"	25'-7"	23'-8"
		14"	37'-11"	34'-5"	32'-4"	29'-11"	34'-1"	30'-11"	29'-1"	26'-11"
		16"	42'-0"	38'-1"	35'-9"	33'-2"	37'-9"	34'-3"	32'-2"	29'-10"
	90s	11⅞"	38'-2"	34'-7"	32'-6"	30'-1"	34'-4"	31'-1"	29'-3"	27'-1"
		14"	43'-3"	39'-2"	36'-10"	34'-1"	38'-10"	35'-3"	33'-1"	30'-8"
		16"	47'-10"	43'-5"	40'-9"	37'-9"	43'-0"	39'-0"	36'-8"	34'-0"
Dead Load = 10 PSF Snow Load = 30 PSF	4500s	9½"	21'-3"	19'-4"	18'-2"	16'-2"	19'-3"	17'-6"	16'-5"	15'-3"
		11⅞"	25'-4"	22'-6"	20'-7"	18'-4"	22'-11"	20'-9"	19'-6"	17'-9"
		14"	28'-5"	24'-6"	22'-5"	20'-0"	26'-0"	23'-7"	21'-8"	19'-5"
		16"	30'-4"	26'-3"	23'-11"	21'-4"	28'-10"	25'-5"	23'-2"	20'-9"
	5000s	9½"	22'-2"	20'-1"	18'-10"	17'-6"	20'-1"	18'-2"	17'-1"	15'-10"
		11⅞"	26'-5"	23'-11"	22'-0"	19'-8"	23'-11"	21'-8"	20'-4"	18'-10"
		14"	29'-10"	26'-4"	24'-0"	21'-6"	27'-0"	24'-6"	23'-0"	20'-10"
	6000s	9½"	23'-2"	21'-0"	19'-9"	18'-3"	21'-0"	19'-0"	17'-10"	16'-7"
		11⅞"	27'-6"	24'-11"	23'-5"	21'-3"	24'-11"	22'-7"	21'-3"	19'-8"
		14"	31'-3"	28'-4"	25'-11"	23'-2"	28'-4"	25'-8"	24'-2"	22'-4"
		16"	34'-6"	30'-5"	27'-8"	24'-9"	31'-3"	28'-4"	26'-8"	24'-0"
	6500s	9½"	23'-11"	21'-8"	20'-4"	18'-10"	21'-8"	19'-8"	18'-5"	17'-1"
		11⅞"	28'-4"	25'-8"	24'-1"	22'-4"	25'-8"	23'-3"	21'-10"	20'-3"
		14"	32'-2"	29'-2"	27'-5"	24'-5"	29'-2"	26'-5"	24'-10"	23'-0"
		16"	35'-7"	32'-0"	29'-2"	26'-1"	32'-2"	29'-2"	27'-5"	25'-5"
	60s	11⅞"	30'-4"	27'-6"	25'-10"	23'-11"	27'-6"	24'-11"	23'-5"	21'-8"
		14"	34'-6"	31'-3"	29'-5"	27'-3"	31'-3"	28'-4"	26'-8"	24'-8"
		16"	38'-2"	34'-8"	32'-6"	30'-2"	34'-7"	31'-4"	29'-6"	27'-4"
	90s	11⅞"	34'-8"	31'-5"	29'-6"	27'-4"	31'-5"	28'-6"	26'-9"	24'-10"
		14"	39'-4"	35'-8"	33'-6"	31'-0"	35'-7"	32'-3"	30'-4"	28'-1"
		16"	43'-7"	39'-6"	37'-1"	34'-4"	39'-5"	35'-9"	33'-7"	31'-2"

NOTES FOR TABLES ON PAGES 16 AND 17

- ▶ Spans shown are in accordance with NBCC 2020.
- ▶ Maximum spans listed are the clear horizontal spans between supports (simple/multiple spans, or one span plus a 2-foot overhang).
- ▶ Minimum end bearing length at end support is 1½".
- ▶ Minimum interior bearing length is 3½".
- ▶ Joists deeper than 16" require web stiffeners at all bearing locations.
- ▶ **Total load deflection is limited to L/180, live load deflection is limited to L/240.**
Check the local building code for other deflection limits that may apply.

- ▶ Lateral support must be provided for the compression edge and also at the bearings to prevent lateral displacement or rotation.
- ▶ Spans shown have not been evaluated for snow drift.
- ▶ Slope roof joists at least ¼:12 to minimize ponding.
- ▶ Allowable spans and loads shall be adjusted and checked for wind loads as required by local building code.
- ▶ It may be possible to exceed the limitations of this table by analysing a specific application with the BC Calc® or BC Framers® software.

(continued on page 17)

WARNING: Use of Span Tables for Commercial Projects (NBCC 2020: Part 4): All projects within the scope of Part 4 of the National Building Code of Canada (NBCC) must consider the effects of concentrated loads, as stipulated in article 4.1.5.9. The designer of record must verify the effects of a concentrated load on the joists on all projects within the scope of Part 4 of NBCC. Table 4.1.5.9 lists concentrated loads that shall be analysed with respect to the intended use of the floor. Given the numerous possible permutations, the span tables listed above do not take the effects of concentrated loads into consideration.

Roof Span Tables

Loads	BCI® Joist		Low Roof Slope (¼:12 to 6:12)				High Roof Slope (< 6:12 to 12:12)			
	Series	Depth	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Dead Load = 10 PSF Snow Load = 40 PSF	4500s	9½"	19'-6"	17'-8"	16'-2"	14'-5"	18'-0"	16'-4"	15'-4"	14'-2"
		11⅞"	23'-2"	20'-1"	18'-4"	16'-4"	21'-5"	19'-5"	17'-10"	15'-11"
		14"	25'-4"	21'-11"	19'-11"	17'-10"	24'-3"	21'-4"	19'-6"	17'-5"
		16"	27'-1"	23'-5"	21'-4"	19'-1"	26'-5"	22'-10"	20'-10"	18'-7"
	5000s	9½"	20'-3"	18'-5"	17'-3"	15'-6"	18'-9"	17'-0"	15'-11"	14'-9"
		11⅞"	24'-2"	21'-7"	19'-8"	17'-7"	22'-3"	20'-3"	19'-0"	17'-1"
		14"	27'-4"	23'-6"	21'-5"	19'-2"	25'-2"	22'-10"	20'-11"	18'-8"
	6000s	9½"	21'-2"	19'-3"	18'-1"	16'-8"	19'-7"	17'-9"	16'-8"	15'-5"
		11⅞"	25'-2"	22'-10"	21'-3"	18'-11"	23'-3"	21'-1"	19'-10"	18'-4"
		14"	28'-7"	25'-4"	23'-1"	20'-8"	26'-5"	23'-11"	22'-6"	20'-2"
		16"	31'-4"	27'-1"	24'-9"	22'-1"	29'-2"	26'-6"	24'-1"	21'-6"
	6500s	9½"	21'-11"	19'-10"	18'-7"	17'-3"	20'-2"	18'-4"	17'-2"	15'-11"
		11⅞"	25'-11"	23'-6"	22'-1"	19'-11"	23'-11"	21'-8"	20'-5"	18'-11"
		14"	29'-6"	26'-8"	24'-4"	21'-9"	27'-2"	24'-8"	23'-2"	21'-3"
		16"	32'-7"	28'-6"	26'-0"	23'-3"	30'-0"	27'-3"	25'-5"	22'-8"
	60s	11⅞"	27'-9"	25'-2"	23'-8"	21'-11"	25'-8"	23'-3"	21'-10"	20'-3"
		14"	31'-7"	28'-7"	26'-11"	24'-11"	29'-2"	26'-5"	24'-10"	23'-0"
		16"	35'-0"	31'-8"	29'-9"	24'-9"	32'-3"	29'-3"	27'-6"	23'-7"
	90s	11⅞"	31'-9"	28'-9"	27'-0"	25'-0"	29'-4"	26'-7"	25'-0"	23'-2"
		14"	36'-0"	32'-7"	30'-7"	26'-5"	33'-3"	30'-1"	28'-3"	25'-1"
		16"	39'-10"	36'-1"	33'-11"	27'-6"	36'-10"	33'-4"	31'-4"	26'-2"
Dead Load = 10 PSF Snow Load = 50 PSF	4500s	9½"	18'-1"	16'-2"	14'-8"	13'-2"	16'-9"	15'-2"	14'-3"	12'-10"
		11⅞"	21'-2"	18'-4"	16'-8"	14'-11"	19'-11"	18'-1"	16'-4"	14'-7"
		14"	23'-1"	19'-11"	18'-2"	16'-3"	22'-7"	19'-6"	17'-10"	15'-11"
		16"	24'-8"	21'-4"	19'-5"	16'-7"	24'-2"	20'-10"	19'-0"	15'-11"
	5000s	9½"	18'-10"	17'-0"	15'-9"	14'-1"	17'-5"	15'-10"	14'-10"	13'-9"
		11⅞"	22'-5"	19'-8"	17'-11"	16'-0"	20'-9"	18'-10"	17'-8"	15'-8"
		14"	24'-9"	21'-5"	19'-6"	16'-7"	23'-6"	21'-0"	19'-1"	15'-11"
	6000s	9½"	19'-8"	17'-9"	16'-8"	15'-2"	18'-3"	16'-6"	15'-6"	14'-4"
		11⅞"	23'-4"	21'-2"	19'-4"	17'-3"	21'-8"	19'-8"	18'-5"	17'-1"
		14"	26'-6"	23'-1"	21'-1"	18'-10"	24'-7"	22'-4"	20'-8"	18'-5"
		16"	28'-6"	24'-8"	22'-6"	20'-1"	27'-2"	24'-2"	22'-1"	19'-8"
	6500s	9½"	20'-3"	18'-4"	17'-3"	15'-11"	18'-10"	17'-1"	16'-0"	14'-10"
		11⅞"	24'-0"	21'-9"	20'-5"	18'-2"	22'-3"	20'-2"	19'-0"	17'-7"
		14"	27'-4"	24'-4"	22'-2"	19'-10"	25'-4"	23'-0"	21'-7"	19'-5"
		16"	30'-2"	26'-0"	23'-8"	20'-7"	28'-0"	25'-4"	23'-3"	19'-9"
	60s	11⅞"	25'-9"	23'-4"	21'-11"	20'-3"	23'-11"	21'-8"	20'-4"	18'-10"
		14"	29'-3"	26'-6"	24'-11"	20'-7"	27'-2"	24'-7"	23'-1"	19'-9"
		16"	32'-5"	29'-4"	25'-9"	20'-7"	30'-1"	27'-3"	24'-8"	19'-9"
	90s	11⅞"	29'-5"	26'-8"	25'-0"	21'-11"	27'-4"	24'-9"	23'-3"	21'-0"
		14"	33'-4"	30'-2"	27'-5"	21'-11"	30'-11"	28'-1"	26'-4"	21'-0"
		16"	36'-11"	33'-5"	28'-7"	22'-9"	34'-3"	31'-1"	27'-5"	21'-10"

(CONTINUED FROM PAGE 16)

- For continuous spans over intermediate bearings, the shortest span must not be less than 50% of the longest adjacent span. The end of the short span should be anchored to resist the uplift equal to:

Uplift = $L_2 \times (\text{factor}_1 \times W_{FD} - W_{FL}) / \text{factor}_2$, where:

W_{FD} = Factored dead load (lb/ft)

W_{FL} = Factored live load (lb/ft)

L_1 = Length of shorter span (ft)

L_2 = Length of longer span (ft)

$\text{Factor}_1 = 4a^2 + 3a^3 - 1$

$\text{Factor}_2 = 8a(1+a)$

a = Short span/long span

Short/Long span ratio = a	0.50	0.60	0.70	0.80	0.90	1.00
factor ₁	0.38	1.09	1.99	3.10	4.43	6.00
factor ₂	6.00	7.68	9.52	11.52	13.68	16.00

Actual Deflection Based on Span and Limit

Deflection Limit	Span					
	15'	17'	20'	25'	30'	40'
L/240	0.75"	0.85"	1.00"	1.25"	1.50"	2.00"
L/180	1.00"	1.13"	1.33"	1.67"	2.00"	2.67"

Roof Span Tables

Loads	BCI® Joist		Low Roof Slope (¼:12 to 6:12)				High Roof Slope (< 6:12 to 12:12)			
	Series	Depth	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Dead Load = 15PSF Snow Load = 20 PSF	4500s	9½"	22'-1"	20'-1"	18'-10"	17'-5"	19'-9"	17'-11"	16'-10"	15'-7"
		11⅞"	26'-4"	23'-10"	22'-1"	19'-9"	23'-5"	21'-3"	20'-0"	18'-6"
		14"	29'-10"	26'-5"	24'-1"	21'-6"	26'-7"	24'-2"	22'-8"	20'-5"
		16"	32'-8"	28'-3"	25'-9"	23'-0"	29'-6"	26'-9"	24'-5"	21'-10"
	5000s	9½"	23'-0"	20'-11"	19'-7"	18'-2"	20'-6"	18'-7"	17'-6"	16'-3"
		11⅞"	27'-5"	24'-10"	23'-4"	21'-2"	24'-5"	22'-2"	20'-10"	19'-4"
		14"	31'-0"	28'-1"	25'-10"	23'-1"	27'-8"	25'-1"	23'-7"	21'-10"
	6000s	9½"	24'-1"	21'-10"	20'-6"	19'-0"	21'-6"	19'-6"	18'-4"	16'-11"
		11⅞"	28'-7"	25'-11"	24'-4"	22'-7"	25'-6"	23'-2"	21'-9"	20'-2"
		14"	32'-6"	29'-5"	27'-8"	24'-11"	29'-0"	26'-3"	24'-8"	22'-11"
		16"	35'-11"	32'-7"	29'-10"	26'-8"	32'-0"	29'-0"	27'-3"	25'-4"
	6500s	9½"	24'-10"	22'-6"	21'-2"	19'-7"	22'-2"	20'-1"	18'-11"	17'-6"
		11⅞"	29'-5"	26'-8"	25'-1"	23'-3"	26'-3"	23'-10"	22'-4"	20'-9"
		14"	33'-5"	30'-4"	28'-6"	26'-5"	29'-10"	27'-1"	25'-5"	23'-7"
		16"	36'-11"	33'-6"	31'-6"	28'-1"	32'-11"	29'-11"	28'-1"	26'-0"
	60s	11⅞"	31'-6"	28'-7"	26'-10"	24'-11"	28'-2"	25'-6"	24'-0"	22'-3"
		14"	35'-10"	32'-6"	30'-7"	28'-3"	32'-0"	29'-0"	27'-3"	25'-3"
		16"	39'-8"	36'-0"	33'-10"	31'-4"	35'-5"	32'-1"	30'-2"	28'-0"
	90s	11⅞"	36'-1"	32'-8"	30'-9"	28'-5"	32'-2"	29'-2"	27'-5"	25'-5"
		14"	40'-10"	37'-0"	34'-10"	32'-3"	36'-5"	33'-1"	31'-1"	28'-9"
		16"	45'-3"	41'-0"	38'-7"	35'-8"	40'-4"	36'-7"	34'-5"	31'-11"
Dead Load = 15 PSF Snow Load = 30 PSF	4500s	9½"	20'-5"	18'-6"	17'-1"	15'-3"	18'-4"	16'-7"	15'-7"	14'-6"
		11⅞"	24'-3"	21'-3"	19'-5"	17'-4"	21'-9"	19'-9"	18'-7"	16'-8"
		14"	26'-10"	23'-2"	21'-2"	18'-11"	24'-9"	22'-5"	20'-4"	18'-2"
		16"	28'-8"	24'-9"	22'-7"	20'-2"	27'-5"	23'-10"	21'-8"	19'-5"
	5000s	9½"	21'-3"	19'-3"	18'-1"	16'-5"	19'-1"	17'-4"	16'-3"	15'-1"
		11⅞"	25'-3"	22'-11"	20'-10"	18'-7"	22'-9"	20'-7"	19'-4"	17'-11"
		14"	28'-7"	24'-11"	22'-8"	20'-3"	25'-8"	23'-3"	21'-11"	19'-6"
	6000s	9½"	22'-2"	20'-1"	18'-11"	17'-6"	19'-11"	18'-1"	17'-0"	15'-9"
		11⅞"	26'-4"	23'-11"	22'-5"	20'-1"	23'-8"	21'-6"	20'-2"	18'-9"
		14"	29'-11"	26'-10"	24'-6"	21'-11"	26'-11"	24'-5"	22'-11"	21'-0"
		16"	33'-1"	28'-9"	26'-2"	23'-5"	29'-9"	27'-0"	25'-4"	22'-6"
	6500s	9½"	22'-11"	20'-9"	19'-6"	18'-0"	20'-7"	18'-8"	17'-6"	16'-3"
		11⅞"	27'-1"	24'-7"	23'-1"	21'-2"	24'-5"	22'-1"	20'-9"	19'-3"
		14"	30'-10"	27'-11"	25'-10"	23'-1"	27'-8"	25'-2"	23'-7"	21'-11"
		16"	34'-0"	30'-3"	27'-7"	24'-8"	30'-7"	27'-9"	26'-1"	23'-8"
	60s	11⅞"	29'-1"	26'-4"	24'-9"	22'-11"	26'-2"	23'-8"	22'-3"	20'-7"
		14"	33'-0"	29'-11"	28'-1"	26'-0"	29'-8"	26'-11"	25'-4"	23'-5"
		16"	36'-7"	33'-2"	31'-2"	27'-10"	32'-11"	29'-10"	28'-0"	25'-7"
	90s	11⅞"	33'-3"	30'-1"	28'-3"	26'-2"	29'-11"	27'-1"	25'-5"	23'-7"
		14"	37'-8"	34'-1"	32'-0"	29'-8"	33'-10"	30'-8"	28'-10"	26'-9"
		16"	41'-8"	37'-9"	35'-6"	30'-10"	37'-6"	34'-0"	31'-11"	28'-5"

NOTES FOR TABLES ON PAGES 18 AND 19

- ▶ Spans shown are in accordance with NBCC 2020.
- ▶ Maximum spans listed are the clear horizontal spans between supports (simple/multiple spans, or one span plus a 2-foot overhang).
- ▶ Minimum end bearing length at end support is 1½".
- ▶ Minimum interior bearing length is 3½".
- ▶ Joists deeper than 16" require web stiffeners at all bearing locations.
- ▶ **Total load deflection is limited to L/180, live load deflection is limited to L/240.**
Check the local building code for other deflection limits that may apply.

- ▶ Lateral support must be provided for the compression edge and also at the bearings to prevent lateral displacement or rotation.
- ▶ Spans shown have not been evaluated for snow drift.
- ▶ Slope roof joists at least ¼:12 to minimize ponding.
- ▶ Allowable spans and loads shall be adjusted and checked for wind loads as required by local building code.
- ▶ It may be possible to exceed the limitations of this table by analysing a specific application with the BC Calc® or BC Framer® software.

(continued on page 19)

WARNING: Use of Span Tables for Commercial Projects (NBCC 2020: Part 4): All projects within the scope of Part 4 of the National Building Code of Canada (NBCC) must consider the effects of concentrated loads, as stipulated in article 4.1.5.9. The designer of record must verify the effects of a concentrated load on the joists on all projects within the scope of Part 4 of NBCC. Table 4.1.5.9 lists concentrated loads that shall be analysed with respect to the intended use of the floor. Given the numerous possible permutations, the span tables listed above do not take the effects of concentrated loads into consideration.

Roof Span Tables

Loads	BCI® Joist		Low Roof Slope (¼:12 to 6:12)				High Roof Slope (< 6:12 to 12:12)			
	Series	Depth	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
Dead Load = 15 PSF Snow Load = 40 PSF	4500s	9½"	19'-1"	16'-11"	15'-5"	13'-9"	17'-3"	15'-8"	14'-8"	13'-4"
		11⅞"	22'-2"	19'-2"	17'-6"	15'-7"	20'-6"	18'-7"	16'-11"	15'-1"
		14"	24'-2"	20'-11"	19'-1"	17'-0"	23'-3"	20'-3"	18'-5"	16'-6"
		16"	25'-10"	22'-4"	20'-5"	18'-2"	25'-0"	21'-7"	19'-8"	17'-1"
	5000s	9½"	19'-10"	18'-0"	16'-7"	14'-9"	17'-11"	16'-3"	15'-3"	14'-2"
		11⅞"	23'-8"	20'-7"	18'-9"	16'-9"	21'-5"	19'-5"	18'-3"	16'-3"
		14"	25'-11"	22'-5"	20'-6"	18'-3"	24'-2"	21'-8"	19'-9"	17'-1"
	6000s	9½"	20'-9"	18'-10"	17'-8"	15'-11"	18'-9"	17'-0"	16'-0"	14'-10"
		11⅞"	24'-8"	22'-4"	20'-3"	18'-1"	22'-4"	20'-3"	19'-0"	17'-7"
		14"	28'-0"	24'-3"	22'-1"	19'-9"	25'-4"	23'-0"	21'-4"	19'-1"
		16"	29'-11"	25'-11"	23'-7"	21'-1"	28'-0"	25'-0"	22'-10"	20'-5"
	6500s	9½"	21'-5"	19'-5"	18'-3"	16'-10"	19'-4"	17'-7"	16'-6"	15'-3"
		11⅞"	25'-5"	23'-0"	21'-4"	19'-1"	22'-11"	20'-10"	19'-7"	18'-1"
		14"	28'-10"	25'-6"	23'-3"	20'-9"	26'-1"	23'-8"	22'-3"	20'-1"
		16"	31'-6"	27'-3"	24'-10"	22'-3"	28'-10"	26'-1"	24'-0"	21'-2"
	60s	11⅞"	27'-2"	24'-8"	23'-2"	21'-5"	24'-7"	22'-3"	20'-11"	19'-5"
		14"	30'-11"	28'-0"	26'-4"	22'-7"	27'-11"	25'-4"	23'-10"	21'-2"
		16"	34'-3"	31'-0"	28'-4"	22'-7"	30'-11"	28'-1"	26'-4"	21'-2"
	90s	11⅞"	31'-1"	28'-2"	26'-5"	24'-1"	28'-1"	25'-6"	23'-11"	22'-2"
		14"	35'-3"	31'-11"	29'-11"	24'-1"	31'-10"	28'-11"	27'-1"	22'-6"
		16"	39'-0"	35'-4"	31'-5"	25'-1"	35'-3"	32'-0"	29'-4"	23'-5"
Dead Load = 15 PSF Snow Load = 50 PSF	4500s	9½"	18'-1"	15'-6"	14'-2"	12'-8"	16'-5"	14'-10"	13'-11"	12'-3"
		11⅞"	20'-4"	17'-7"	16'-1"	14'-4"	19'-6"	17'-1"	15'-7"	13'-11"
		14"	22'-2"	19'-2"	17'-6"	15'-5"	21'-7"	18'-8"	17'-0"	14'-6"
		16"	23'-9"	20'-6"	18'-8"	15'-5"	23'-1"	19'-11"	18'-2"	14'-6"
	5000s	9½"	18'-9"	16'-8"	15'-2"	13'-7"	17'-1"	15'-5"	14'-6"	13'-2"
		11⅞"	21'-10"	18'-11"	17'-3"	15'-5"	20'-4"	18'-5"	16'-9"	14'-6"
		14"	23'-10"	20'-7"	18'-9"	15'-5"	22'-11"	20'-0"	18'-3"	14'-6"
	6000s	9½"	19'-8"	17'-9"	16'-5"	14'-8"	17'-10"	16'-2"	15'-2"	14'-1"
		11⅞"	23'-4"	20'-5"	18'-7"	16'-7"	21'-2"	19'-2"	18'-0"	16'-2"
		14"	25'-8"	22'-3"	20'-3"	18'-1"	24'-1"	21'-10"	19'-8"	17'-7"
		16"	27'-6"	23'-9"	21'-8"	19'-0"	26'-7"	23'-1"	21'-1"	18'-0"
	6500s	9½"	20'-3"	18'-4"	17'-3"	15'-5"	18'-5"	16'-8"	15'-8"	14'-6"
		11⅞"	24'-0"	21'-6"	19'-7"	17'-6"	21'-10"	19'-9"	18'-7"	17'-2"
		14"	27'-1"	23'-5"	21'-4"	19'-0"	24'-9"	22'-5"	20'-9"	18'-0"
		16"	28'-11"	25'-0"	22'-10"	19'-0"	27'-4"	24'-4"	22'-2"	18'-0"
	60s	11⅞"	25'-9"	23'-3"	21'-10"	19'-0"	23'-4"	21'-2"	19'-11"	18'-0"
		14"	29'-3"	26'-6"	23'-10"	19'-0"	26'-7"	24'-1"	22'-7"	18'-0"
		16"	32'-5"	28'-8"	23'-10"	19'-0"	29'-5"	26'-8"	22'-6"	18'-0"
	90s	11⅞"	29'-5"	26'-7"	25'-0"	20'-3"	26'-8"	24'-2"	22'-9"	19'-2"
		14"	33'-4"	30'-2"	25'-5"	20'-3"	30'-3"	27'-5"	24'-0"	19'-2"
		16"	36'-11"	31'-10"	26'-5"	21'-1"	33'-6"	30'-0"	25'-0"	19'-11"

(CONTINUED FROM PAGE 18)

- For continuous spans over intermediate bearings, the shortest span must not be less than 50% of the longest adjacent span. The end of the short span should be anchored to resist the uplift equal to:

Uplift = $L_2 \cdot (\text{factor}_1 \cdot W_{FD} - W_{FL}) / \text{factor}_2$, where:

W_{FD} = Factored dead load (lb/ft)

W_{FL} = Factored live load (lb/ft)

L_1 = Length of shorter span (ft)

L_2 = Length of longer span (ft)

$\text{Factor}_1 = 4a^2 + 3a^3 - 1$

$\text{Factor}_2 = 8a(1+a)$

a = Short span/long span

Short/Long span ratio = a	0.50	0.60	0.70	0.80	0.90	1.00
factor ₁	0.38	1.09	1.99	3.10	4.43	6.00
factor ₂	6.00	7.68	9.52	11.52	13.68	16.00

Actual Deflection Based on Span and Limit

Deflection Limit	Span						
	15'	17'	20'	25'	30'	35'	40'
L/240	0.75"	0.85"	1.00"	1.25"	1.50"	1.75"	2.00"
L/180	1.00"	1.13"	1.33"	1.67"	2.00"	2.33"	2.67"

Roof Allowable Uniform Loads, PLF

Design Span	Specified Loads (PLF)	BCI® 4500s				BCI® 5000s				BCI® 6000s				BCI® 6500s				BCI® 60s			BCI® 90s		
		9½"	11⅞"	14"	16"	9½"	11⅞"	14"	16"	9½"	11⅞"	14"	16"	9½"	11⅞"	14"	16"	11⅞"	14"	16"	11⅞"	14"	16"
6'	Unfactored Snow Load for L/240	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Unfactored Total Load for L/180	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Factored Total Load	441	473	494	500	441	473	494	505	526	546	557	505	526	546	557	526	548	557	637	641	653	
8'	Unfactored Snow Load for L/240	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Unfactored Total Load for L/180	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Factored Total Load	331	355	371	375	331	355	371	379	395	410	418	379	395	410	418	395	411	418	478	481	490	
10'	Unfactored Snow Load for L/240	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Unfactored Total Load for L/180	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Factored Total Load	264	284	296	300	264	284	296	303	316	328	334	303	316	328	334	316	328	334	382	384	392	
12'	Unfactored Snow Load for L/240	179	–	–	–	200	–	–	225	–	–	–	245	–	–	–	–	–	–	–	–	–	–
	Unfactored Total Load for L/180	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Factored Total Load	220	236	247	250	220	236	247	252	263	273	278	252	263	273	278	263	274	278	318	320	326	
14'	Unfactored Snow Load for L/240	115	189	–	–	129	–	–	146	–	–	–	160	–	–	–	–	–	–	–	–	–	–
	Unfactored Total Load for L/180	154	–	–	–	173	–	–	195	–	–	–	213	–	–	–	–	–	–	–	–	–	–
	Factored Total Load	162	202	212	214	186	202	212	216	225	234	238	216	225	234	238	225	234	238	273	274	280	
16'	Unfactored Snow Load for L/240	79	130	–	–	88	146	–	100	164	–	–	109	177	–	–	–	–	–	–	–	–	–
	Unfactored Total Load for L/180	105	–	–	–	118	–	–	133	–	–	–	146	–	–	–	–	–	–	–	–	–	–
	Factored Total Load	124	159	185	187	142	177	185	165	197	205	209	181	197	205	209	197	205	209	239	240	245	
18'	Unfactored Snow Load for L/240	56	92	133	–	63	104	148	71	117	168	–	78	127	–	–	154	–	–	–	–	–	–
	Unfactored Total Load for L/180	74	123	–	–	84	139	–	95	156	–	–	104	169	–	–	–	–	–	–	–	–	–
	Factored Total Load	98	125	149	166	112	144	164	131	168	182	185	143	175	182	185	175	182	185	212	213	217	
20'	Unfactored Snow Load for L/240	41	68	98	132	46	77	109	52	87	125	166	57	94	136	–	114	–	–	165	–	–	–
	Unfactored Total Load for L/180	55	91	–	–	62	102	–	70	116	–	–	77	125	–	–	152	–	–	–	–	–	–
	Factored Total Load	79	102	120	137	91	117	139	106	136	161	167	116	150	164	167	158	164	167	191	192	196	
22'	Unfactored Snow Load for L/240	31	51	75	100	35	58	83	40	66	95	127	43	71	103	137	87	125	–	126	–	–	–
	Unfactored Total Load for L/180	41	69	–	–	46	78	111	53	88	127	–	58	95	138	–	116	–	–	169	–	–	–
	Factored Total Load	65	84	99	113	75	96	114	87	112	133	152	95	124	147	152	143	149	152	173	174	178	
24'	Unfactored Snow Load for L/240	24	40	58	78	27	45	64	31	51	74	99	34	55	80	107	68	98	131	99	141	–	–
	Unfactored Total Load for L/180	32	53	77	–	36	60	86	41	68	99	–	45	74	107	–	90	131	–	132	–	–	–
	Factored Total Load	55	70	83	95	63	81	96	73	94	112	128	80	104	124	139	131	137	139	159	160	163	
26'	Unfactored Snow Load for L/240		31	46	62	21	35	51	24	40	58	78	26	44	64	85	53	78	104	79	112	150	
	Unfactored Total Load for L/180		42	61	–	28	47	68	32	54	78	104	35	58	85	113	71	104	–	105	–	–	–
	Factored Total Load		60	71	81	54	69	82	62	80	95	109	68	89	105	120	121	126	128	147	148	150	
28'	Unfactored Snow Load for L/240		25	37	50		28	41		32	47	63	21	35	51	69	43	63	84	63	91	122	
	Unfactored Total Load for L/180		34	49	66		38	55		43	63	84	28	47	68	92	58	84	112	85	121	–	–
	Factored Total Load		52	61	70		59	70		69	82	94	59	76	91	104	105	117	119	136	137	140	
30'	Unfactored Snow Load for L/240		20	30	40		23	33		26	38	51		29	42	56	35	51	69	52	75	100	
	Unfactored Total Load for L/180		27	40	54		31	45		35	51	69		38	56	75	47	68	92	69	100	–	–
	Factored Total Load		45	53	61		52	61		60	71	81		67	79	90	92	109	111	127	128	130	

NOTES

► Loading conditions:

- Unfactored snow load values are limited by deflection equal to L/240. For deflections limited to L/360, multiply snow load values by 0.67.
- Unfactored total load values are limited by deflection equal to L/180.
- Factored total load values are limited by shear, end/interior reactions or bending moment. Values also assume minimum bearing lengths without web stiffeners.
- All three loading cases must be checked. Where a snow load value is not shown, the factored total load value will control.

► Table values:

- represent the most restrictive of simple or continuous span beams applications and assume uniform loading. Span is measured center-to-center of the supports. Analyse continuous span beams with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- assume that lateral support is provided at each support and continuously along the compression edge of the beam.
- do not consider composite action from gluing and nailing floor sheathing.

► For 2-ply, double all loading values (unfactored live load, unfactored total load, or factored total load)..

► This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analysing a specific application with the BC Calc® software.

Actual Deflection (in inches) Based on Span and Limit

Deflection Limit	Span												
	6'	8'	10'	12'	14'	16'	18'	20'	22'	24'	26'	28'	30'
L/360	0.20	0.27	0.33	0.40	0.47	0.53	0.60	0.67	0.73	0.80	0.87	0.93	1.00
L/240	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.30	1.40	1.50
L/180	0.40	0.53	0.67	0.80	0.93	1.07	1.20	1.33	1.47	1.60	1.73	1.87	2.00

Dead Load Slope Factor

Joist Pitch	2:12	3:12	4:12	5:12	6:12	7:12	8:12	9:12	10:12	11:12	12:12
Slope Factor	1.014	1.031	1.054	1.083	1.118	1.158	1.202	1.250	1.302	1.357	1.414

PSF to PLF Conversion Table

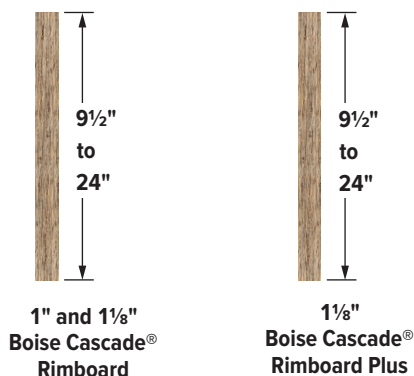
Joist Spacing	Load Per Square Foot (psf)							
	20	25	30	35	40	45	50	60
	Load in Pounds per Linear Foot (plf)							
12"	20	25	30	35	40	45	50	60
16"	27	33	40	47	53	60	67	80
19.2"	32	40	48	56	64	72	80	96
24"	40	50	60	70	80	90	100	120

To Convert From Specified Load (plf) To Factored Load (plf)

Factored (PLF) = 1.25 x Specified Dead Load (PLF) + 1.50 x Specified Live/Snow Load (PLF).

Rim Board Product Profiles and Details

Product Profiles



F56 Ledger Detail

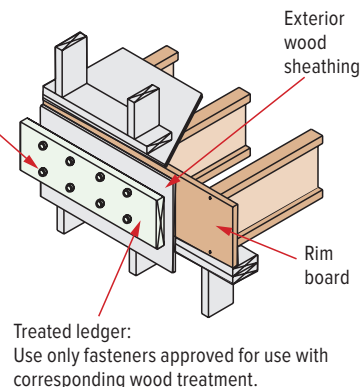
1/2" diameter through bolts (ASTM A307 Grades A&B, SAE J429 Grade 1 or higher) with washers and nuts;

or

1/2" diameter lag screws (full penetration).

Either option provides:

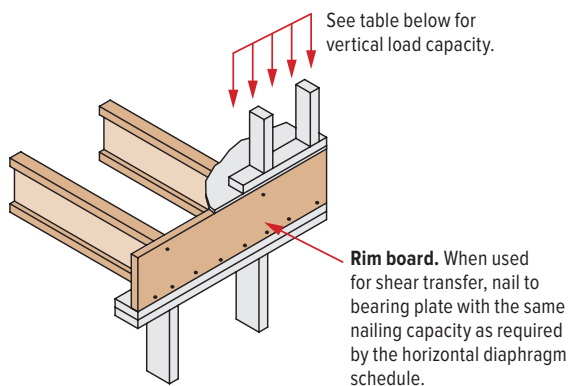
- 585 lbs per fastener with 1 1/8" or thicker rim
- 495 lbs per fastener with 1" rim



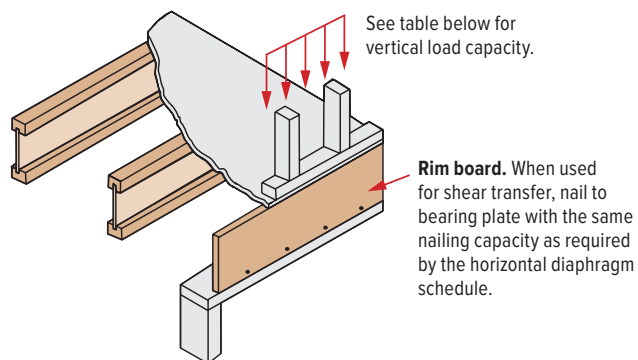
Treated ledger: Use only fasteners approved for use with corresponding wood treatment.

Design of moisture control by others; only structural components are shown above.

F07 Rim Board Perpendicular to BCI® Joists



F07A Rim Board Parallel to BCI® Joists



Rim Board Properties

Product	Thickness	$\phi H^{(1)}$ (lb/ft)	ϕV (lb/ft) ⁽²⁾			$\phi Z^{(3)}$ (lb)	$\phi P^{(4)}$ (lb)
			$d \leq 16"$	$16" < d \leq 20"$	$20" < d \leq 24"$		
Boise Cascade® Rimboard (C2)	1"	219	4,785	3,335	2,393	500	5,075
Boise Cascade® Rimboard (C1)	1 1/8"	219	7,033	6,018	4,640	584	5,075
Boise Cascade® Rimboard Plus (B2)	1 1/8"	243	7,033	6,018	4,640	584	5,075

NOTES

- (1) ϕH = Factored horizontal (shear) load transfer capacity is based on the minimum nailing attachment schedule specified in NBCC 2020 and APA document W345 CA
- (2) ϕV = Factored uniform bearing (vertical) load resistance. The uniform bearing load shall be simultaneously satisfied with the concentrated vertical load resistance, when applicable.
- (3) ϕZ = Factored lateral resistance of a 1/2" (12.7 mm) diameter lag screw.
- (4) ϕP = Factored concentrated vertical load resistance is based on 4 1/2" (114 mm) bearing length. The concentrated vertical load shall be simultaneously satisfied with the uniform bearing load capacity, when applicable.

► All tabulated values apply to standard-term load duration and may be adjusted for other load durations in accordance with CSA O86-19.



Framing Connectors – MiTek



SINGLE I-JOIST – Canadian/Factored Resistance (lbs)

Joist Height	Top Mount Hangers ⁴						Face Mount Hangers										
	MiTek Stock No. ¹	Fastener Schedule ⁵		Uplift 115%	Down 100% ²		MiTek Stock No. ¹	Fastener Schedule ⁵		Uplift 115%	Down 100% ²						
		Header	Joist		DF	SPF		Header	Joist		DF	SPF					
BCI® 4500s Joist Width = 1¾"																	
9½	THO17950	(6) 10d	(2) 10d x 1½	490	1,935	1,585	IHFL17925 Min	(8) 10d	–	90	3,240	2,425					
						IHFL17925 Max	(2) 10d x 1½		405								
11⅞	THO17118							1,665	IHFL17112 Min	(10) 10d	–	90	4,420	3,310			
									IHFL17112 Max		(2) 10d x 1½	405					
14	TFL1714			265	2,370	1,960	IHFL1714 Min	(12) 10d	–	90							
							IHFL1714 Min		(2) 10d x 1½	405							
16	TFL1716						IHFL1714 Min		–	90							
							IHFL1714 Min	(2) 10d x 1½	405								
BCI® 5000s Joist Width = 2"																	
9½	TFL2095	(6) 10d	(2) 10d x 1½	265	2,370	1,960	IHFL20925 Min	(8) 10d	–	90	3,240	2,425					
							IHFL20925 Max		(2) 10d x 1½	405							
11⅞	TFL20118											IHFL20112 Min	(10) 10d	–	90	4,420	3,310
												IHFL20112 Max		(2) 10d x 1½	405		
14	TFL2014						IHFL2014 Min	(12) 10d	–	90							
							IHFL2014 Max		(2) 10d x 1½	405							
BCI® 60s/6000s Joist Width = 2⅝"																	
9½	TFL2395	(6) 10d	(2) 10d x 1½	265	2,370	1,960	IHFL23925 Max	(8) 10d	–	90	3,240	2,425					
							IHFL23925 Max		(2) 10d x 1½	405							
11⅞	TFL23118											IHFL23112 Max	(10) 10d	–	90	4,420	3,310
												IHFL23112 Min		(2) 10d x 1½	405		
14	TFL2314						IHFL2314 Min	(12) 10d	–	90							
							IHFL2314 Max		(2) 10d x 1½	405							
16	TFL2316						IHFL2316 Min	(14) 10d	–	90							
							IHFL2316 Max		(2) 10d x 1½	405							
BCI® 6500s Joist Width = 2⅝"																	
9½	TFL2595	(6) 10d	(2) 10d x 1½	265	2,370	1,960	THFI2595	(8) 10d	–	90	1,845	1,700					
11⅞	TFL25118						THFI25118	(10) 10d									
14	TFL2514						THFI2514	(12) 10d			(2) 10d x 1½	405	4,420	3,310			
16	TFL2516						IHFL2516 Min	(14) 10d									
							IHFL2516 Max										
BCI® 90s Joist Width = 3½"																	
11⅞	THO35118	(10) 10d	(2) 10d x 1½	485	2,950	2,620	IHFL35112 Max	(10) 10d	–	90	4,420	3,310					
							IHFL35112 Min		(2) 10d x 1½	405							
14	THO35140	(12) 10d				3,910	3,385	IHFL3514 Max	(12) 10d	–			90				
					IHFL3514 Min			(2) 10d x 1½		405							
16	THO35160			IHFL3516 Max	(14) 10d			–	90								
			IHFL3516 Min	(2) 10d x 1½				405									
Joist Height	Slope and Skew Hangers						Adjustable Height Hangers										
	MiTek Stock No. ^{1,6,9}	Fastener Schedule ⁵		Uplift 115%	Down 100% ²		MiTek Stock No. ^{1,7}	Fastener Schedule ⁵		Uplift 115%	Down 100% ²						
		Header	Joist		DF	SPF		Header	Joist		DF	SPF					
BCI® 4500s Joist Width = 1¾"																	
9½ – 16	LSSH179-TZ Sloped Only		(10) 10d	(7) 10d x 1½	1,565	2,460	2,020	MSH1722	(6) 10d	(4) 10d x 1½	–	3,370	2,750				
	LSSH179-TZ Skewed and/or Slope																
BCI® 5000s Joist Width = 2"																	
9½ – 14	LSSH20-TZ Sloped Only		(10) 10d	(7) 10d x 1½	1,415	2,065	1,685	MSH2022	(6) 10d	(4) 10d	–	3,370	2,750				
	LSSH20-TZ Skewed and/or Slope																
BCI® 60s/6000s Joist Width = 2⅝"																	
9½ – 16	LSSH23-TZ Sloped Only		(10) 10d	(7) 10d x 1½	1,415	2,065	1,685	MSH2322	(6) 10d	(4) 10d x 1½	–	3,370	2,750				
	LSSH23-TZ Skewed and/or Slope																
BCI® 6500s Joist Width = 2⅝"																	
9½ – 16	LSSH25 Sloped Only		(18) 16d	(12) 10d x 1½	1,705	3,735	2,980	MSH322	(6) 10d	(4) 10d x 1½	–	3,370	2,750				
	LSSH25 Skewed and/or Slope		(14) 16d			2,245	1,830										
BCI® 90s Joist Width = 3½"																	
11⅞ – 16	LSSH35-TZ Sloped Only		(18) 16d	(12) 10d x 1½	2,315	4,505	3,860	MSH422	(6) 10d	(6) 10d	–	3,370	2,525				
	LSSH35-TZ Skewed and/or Slope		(14) 16d			2,670	2,195										
Joist Height	Skewed 45° Hangers						Variable Pitch Connectors (Slope 12:12)										
	MiTek Stock No. ¹	Fastener Schedule ⁵		Uplift 115%	Down 100% ²		MiTek Stock No. ^{1,10}	Fastener Schedule ⁴		Uplift 115%	Down 100% ²						
		Header	Rafter		DF	SPF		Plate	Joist		DF	SPF					
BCI® 4500s Joist Width = 1¾"																	
9½ – 11⅞	SKH1720L/R	(14) 10d	(10) 10d x 1½	2,855	3,440	2,700	TMP175	(6) 10d	(4) 10d x 1½	400	1,620	1,270					
14 – 16	SKH1724L/R	(16) 10d			4,640	3,645	TMPH175	(10) 10d	(8) 10d x 1½	375	4,120	3,235					
BCI® 5000s Joist Width = 2"																	
9½ – 11⅞	SKH2020L/R	(14) 10d	(10) 10d x 1½	2,855	3,440	2,700	TMP21	(6) 10d	(4) 10d x 1½	400	1,815	1,425					
14	SKH2024L/R	(16) 10d			4,640	3,645	TMPH21	(10) 10d	(8) 10d x 1½	375	4,120	3,235					
BCI® 60s/6000s Joist Width = 2⅝"																	
9½ – 11⅞	SKH2320L/R	(14) 10d	(10) 10d x 1½	2,855	3,440	2,700	TMP23	(6) 10d	(4) 10d x 1½	400	2,770	2,175					
14 – 16	SKH2324L/R	(16) 10d			4,640	3,645	TMPH23	(10) 10d	(8) 10d x 1½	375	4,120	3,235					
BCI® 6500s Joist Width = 2⅝"																	
9½ – 11⅞	SKH2520L/R	(14) 10d	(10) 10d x 1½	2,855	3,440	2,700	TMP25	(6) 10d	(4) 10d x 1½	400	2,770	2,175					
14 – 16	SKH2524L/R	(16) 10d			4,640	3,645	TMPH25	(10) 10d	(8) 10d x 1½	375	4,120	3,235					
BCI® 90s Joist Width = 3½"																	
11⅞	HD410_SKH45L/R_BV ⁷	(20) 16d	(10) 10d	3,053	5,870	4,625	TMP4	(6) 10d	(4) 10d x 1½	400	2,770	2,175					
14 – 16	HD414_SKH45L/R_BV ⁷	(26) 16d			7,540	6,965	TMPH4	(10) 10d	(8) 10d x 1½	375	4,120	3,235					

Framing Connectors — MiTek



DOUBLE I-JOIST – Canadian/Factored Resistance (lbs)

Joist Height	Top Mount Hangers ⁴						Face Mount Hangers								
	MiTek Stock No. ¹	Fastener Schedule ^{5,6}		Uplift 115%	Down 100% ²		MiTek Stock No. ¹	Fastener Schedule ^{5,6}		Uplift 115%	Down 100% ²				
		Header	Joist		DF	SPF		Header	Joist		DF	SPF			
Double BCI® 4500s													Joist Width = 3½"		
9½	THO35950	(10) 10d	(2) 10d x 1½	485	2,950	2,620	IHFL35925 Max	(10) 10d	(2) 10d x 1½	405	4,420	3,310			
11⅞	THO35118				IHFL35112 Max	(12) 10d									
14	THO35140				3,910		3,385	IHFL3514 Max					(14) 10d		
16	THO35160	(12) 10d			IHFL3516 Max										
Double BCI® 5000s													Joist Width = 4"		
9½	THO20950-2	(10) 16d	(6) 10d	2,140	3,355	3,320	IHF20925-2 Max	(24) 16d	(2) 10d x 1½	605	5,655	4,280			
11⅞	THO20118-2					3,662	IHF20112-2 Max								
14	THO20140-2					4,610	IHF2014-2 Max								
Double BCI® 60s/6000s													Joist Width = 4⅝"		
9½	THO23950-2	(10) 16d	(6) 10d	2,140	5,090	4,570	IHF23925-2 Max	(24) 16d	(2) 10d x 1½	605	5,655	4,280			
11⅞	THO23118-2					IHF23118-2 Max									
14	THO23140-2					IHF23140-2 Max									
16	THO23160-2	(12) 16d			5,545	IHF23160-2 Max									
Double BCI® 6500s													Joist Width = 5⅝"		
9½	THO25950-2	(10) 16d	(6) 10d	2,140	5,090	4,570	IHF25925-2 Max	(24) 16d	(2) 10d x 1½	605	5,655	4,280			
11⅞	THO25118-2					IHF25112-2 Max									
14	THO25140-2					THF25140-2	(20) 10d						(6) 10d	3,185	6,680
16	THO25160-2	(12) 16d	THF25160-2	(24) 10d											
Double BCI® 90s													Joist Width = 7"		
11⅞	BPH71118	(10) 16d	(6) 10d	2,935	5,300	4,305	HD7120	(16) 16d	(6) 10d	2,460	5,030	4,180			
14	BPH7114						HD7140	(20) 16d	(8) 10d	3,745					
16	BPH7116						HD7160	(24) 16d		3,930			5,585	4,710	
Joist Height	Skewed 45° Hangers						Adjustable Height Hangers								
	MiTek Stock No. ^{1,7}	Fastener Schedule ^{5,6}		Uplift 115%	Down 100% ²		MiTek Stock No. ^{1,10}	Fastener Schedule ^{5,6}		Uplift 115%	Down 100% ²				
		Header	Joist		DF	SPF		Header	Joist		DF	SPF			
Double BCI® 4500s													Joist Width = 3½"		
9½	HD_410_SK45L/R_BV	(20) 16d	(10) 10d	3,053	5,870	4,625	MSH422	(6) 10d	(6) 10d	–	3,215	2,525			
11⅞															
14		7,540			6,965										
16	HD_414_SK45L/R_BV	(26) 16d													
Double BCI® 5000s													Joist Width = 4"		
9½	SKH2020L/R-2	(14) 10d	(10) 10d	3,490	5,320	4,175	See current MiTek <i>Structural Products Catalog</i> or BC Framers for specialty hanger options								
11⅞															
14		SKH2024L/R-2		(16) 10d	3,485	4,950							3,885		
Double BCI® 60s/6000s													Joist Width = 4⅝"		
9½	SKH2320L/R-2	(14) 10d	(10) 10d	3,490	5,320	4,175	MSH2322-2 ⁸	(6) 10d	(4) 10d	–	3,475	2,830			
11⅞															
14		SKH2324L/R-2		(16) 10d	3,485	4,950							3,885		
16															
Double BCI® 6500s													Joist Width = 5⅝"		
9½	SKH2520L/R-2	(14) 10d	(10) 10d	3,490	5,320	4,175	See current MiTek <i>Structural Products Catalog</i> or BC Framers for specialty hanger options								
11⅞															
14		SKH2524L/R-2		(16) 10d	3,485	4,950							3,885		
16															
Double BCI® 90s													Joist Width = 7"		
11⅞	HD7120-SK45L/R ⁸	(16) 16d	(6) 10d	2,015	4,675	3,670	See current MiTek <i>Structural Products Catalog</i> or BC Framers for specialty hanger options								
14	HD7140-SK45L/R ⁸	(20) 16d	(8) 10d		7,485	5,875									
16	HD7160-SK45L/R ⁸	(24) 16d			8,250	6,475									

- (1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.
- (2) Factored resistance is based on hanger attachment to a DF-L or SPF species solid sawn lumber, or Versa-Lam® header.
- (3) Factored uplift resistance have been increased 15% for short-term wind and seismic loading; reduce for other load durations in accordance with the code.
- (4) Top mount hangers assume supporting headers to have a minimum height of 5½" and a minimum thickness of the length of the header nails. For wood nailer options or header materials not included in these tables, refer to the current MiTek *Structural Products Catalog*.
- (5) 10d x 1½ nails are 0.148" diameter x 1½" long, 10d nails are 0.148" diameter x 3" long and 16d nails are 0.162" diameter x 3½" long.
- (6) Hangers utilizing 16d nails are not compatible with BCI® joists.
- (7) Bevel cut required on end of joist to achieve design loads.
- (8) Hangers are special order. Consult MiTek for pricing and lead times.
- (9) Supplemental lateral support connection recommended when hanger height is less than 60% of joist height.
- (10) For additional sizes, stock numbers, and modifications not shown, refer to MiTek's *Structural Products Catalog*.

For more information, please call 1.800.268.3434
or go to www.mitek.ca

Framing Connectors — Simpson Strong-Tie

SIMPSON

Strong-Tie

SINGLE I-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									
BCI® 4500s																						Joist Width = 1¾"								
9½	ITS1.81/9.5	2	(6) 10d	—	175	1,570	1,570	IUS1.81/9.5	2	(8) 10d	—	175	1,570	1,570	LF179	2	(10) 10d	(1) #8 x 1¼WS	105	1,570	1,570									
11⅞	ITS1.81/11.88					1,690		IUS1.81/11.88		(10) 10d			1,690	1,690	LF1711		(12) 10d			1,688	1,688									
14	ITS1.81/14					1,700	1,690	IUS1.81/14		(12) 10d			1,700	1,700	LF1714		(14) 10d													
16	ITS1.81/16					1,710		IUS1.81/16		(14) 10d			1,710	1,710	MIU1.81/16		(24) 16d			(2) 10d x 1½	450	1,708	1,708							
BCI® 5000s																						Joist Width = 2"								
9½	ITS2.06/9.5	2	(6) 10d	—	175	1,570		IUS2.06/9.5	2	(8) 10d	—	175	1,570	1,570	HU2.1/9	2	(10) 10d	(6) 10d x 1½	1470	1,640	1,640									
11⅞	ITS2.06/11.88					1,690	1,690	IUS2.06/11.88		(10) 10d			1,690	1,690	LF2011		(12) 10d			1,688	1,688									
14	ITS2.06/14					1,700		IUS2.06/14		(12) 10d			1,700	1,700	LF2014		(14) 10d			(2) #8 x 1¼WS	105									
BCI® 60/6000																														
Joist Width = 2⅝"																														
9½	LT239	2	(6) 10d	(1) #8 x 1¼WS	105	2,625	1,725	IUS2.37/9.5	2	(8) 10d	—	175	1,930	1,690	LF239	2	(10) 10d	(1) #8 x 1¼WS	105	1,930	1,930									
11⅞	LT231188							IUS2.37/11.88		(10) 10d			1,950	1,820	LF2311		(12) 10d			1,950	1,950									
14	LT2314							IUS2.37/14		(12) 10d			1,990	1,820	LF2314		(14) 10d			1,990	1,990									
16	ITS2.37/16							IUS2.37/16		(14) 10d			2,000	1,935	MIU2.37/16		(24) 16d			(2) 10d x 1½	375	2,150	2,150							
BCI® 6500s																						Joist Width = 2⅞"								
9½	LT259	2	(6) 10d	(1) #8 x 1¼WS	105	1,930	1,725	IUS2.56/9.5	2	(8) 10d	—	175	1,930	1,690	LF259	2	(10) 10d	(1) #8 x 1¼WS	105	1,930	1,930									
11⅞	LT251188					1,950		IUS2.56/11.88		(10) 10d			1,950	1,820	LF2511		(12) 10d			1,950	1,950									
14	LT2514					1,990		IUS2.56/14		(12) 10d			1,990	1,820	LF2514		(14) 10d			1,990	1,990									
16	LT2516					2,000		IUS2.56/16		(14) 10d			2,000	1,935	MIU2.56/16		(24) 16d			(2) 10d x 1½	375	2,150	2,150							
BCI® 90s																						Joist Width = 3½"								
11⅞	LT351188	2	(6) 10d	(2) #8 x 1¼WS	105	2,190	1,725	IUS3.56/11.88	2	(12) 10d	—	175	2,190	1,685	LF3511	2	(12) 10d	(1) #8 x 1¼WS	105	2,190	2,190									
14	LT3514					2,210		IUS3.56/14		(12) 10d			2,210	1,685	LF3514		(14) 10d			2,210	2,210									
16	LT3516					2,290		IUS3.56/16		(14) 10d			2,525	1,685	MIU3.56/16		(24) 16d			(2) 10d x 1½	375	2,525	2,525							
Joist Height																														
45° Skew						Adjustable Height						Field Slope & Skew																		
Joist Height	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									
BCI® 4500s																						Joist Width = 1¾"								
9½	SUR/L1.81/9	3	(12) 16d	(2) 10d x 1½	275	1,710	1,710	THAI1.81/22	2¼	(6) 10d	(2) 10d x 1½	—	1,865	1,865	LSSR1.81Z	3½	(14) 10d	(12) 10d x 1½	715	1,695	1,200									
11⅞	SUR/L1.81/11		(16) 16d			2,065	2,065						2,280	2,280																
14	SUR/L1.81/14		(20) 16d			2,095	2,095						2,525	2,385																
16	SUR/L1.81/14		2,980			2,220	See Canadian Wood Construction Connectors catalogue for hanger selection.						See Canadian Wood Construction Connectors catalogue for hanger selection.																	
BCI® 5000s																						Joist Width = 2"								
9½	SUR/L2.06/9	3¾	(14) 16d	(2) 10d x 1½	385	1,735	1,735	THAI2.06/22	2¼	(6) 10d	(2) 10d x 1½	—	1,865	1,865	LSSR2.1Z	3½	(14) 10d	(12) 10d x 1½	715	1,695	1,200									
11⅞	SUR/L2.06/11		(16) 16d			2,135	2,135						2,280	2,280																
14	SUR/L2.06/11		(18) 16d			2,165	2,165						2,525	2,385																
BCI® 60/6000																														
Joist Width = 2⅝"																														
9½	SUR/L2.37/9	3¾	(14) 16d	(2) 10d x 1½	385	2,120	2,120	THAI3522	2¼	(6) 10d	(2) 10d x 1½	—	2,200	2,200	LSSR2.37Z	3½	(14) 10d	(12) 10d x 1½	715	1,695	1,200									
11⅞	SUR/L2.37/11		(16) 16d			2,190	2,190						2,280	2,280																
14	SUR/L2.37/14		(18) 16d			2,325	2,325						2,525	2,385																
16	SUR/L2.37/14					3,035	2,805						See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.										
BCI® 6500s																						Joist Width = 2⅞"								
9½	SUR/L2.56/9	3¾	(14) 16d	(2) 10d x 1½	385	2,120	2,120	THAI322	2¼	(6) 10d	(2) 10d x 1½	—	2,200	2,200	LSSR2.56Z	3½	(14) 10d	(12) 10d x 1½	715	1,695	1,200									
11⅞	SUR/L2.56/11		(16) 16d			2,190	2,190						2,280	2,280																
14	SUR/L2.56/14		(18) 16d			2,325	2,325						2,525	2,385																
16	SUR/L2.56/14					3,035	2,805						See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.										
BCI® 90s																						Joist Width = 3½"								
11⅞	SUR/L410	2⅝	(14) 16d	(6) 16d	1,695	3,010	2,875	THAI422	2¼	(6) 10d	(2) 10d x 1½	—	2,980	2,385	LSSR410Z	3½	(14) 10d	(12) 10d x 1½	990	2,585	1,835									
14	SUR/L414		(18) 16d	(8) 16d	2,265	3,255	2,895						3,000																	
16						3,570							See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.										

Framing Connectors – Simpson Strong-Tie



DOUBLE I-JOISTS – Canadian/Factored Resistance (lbs)

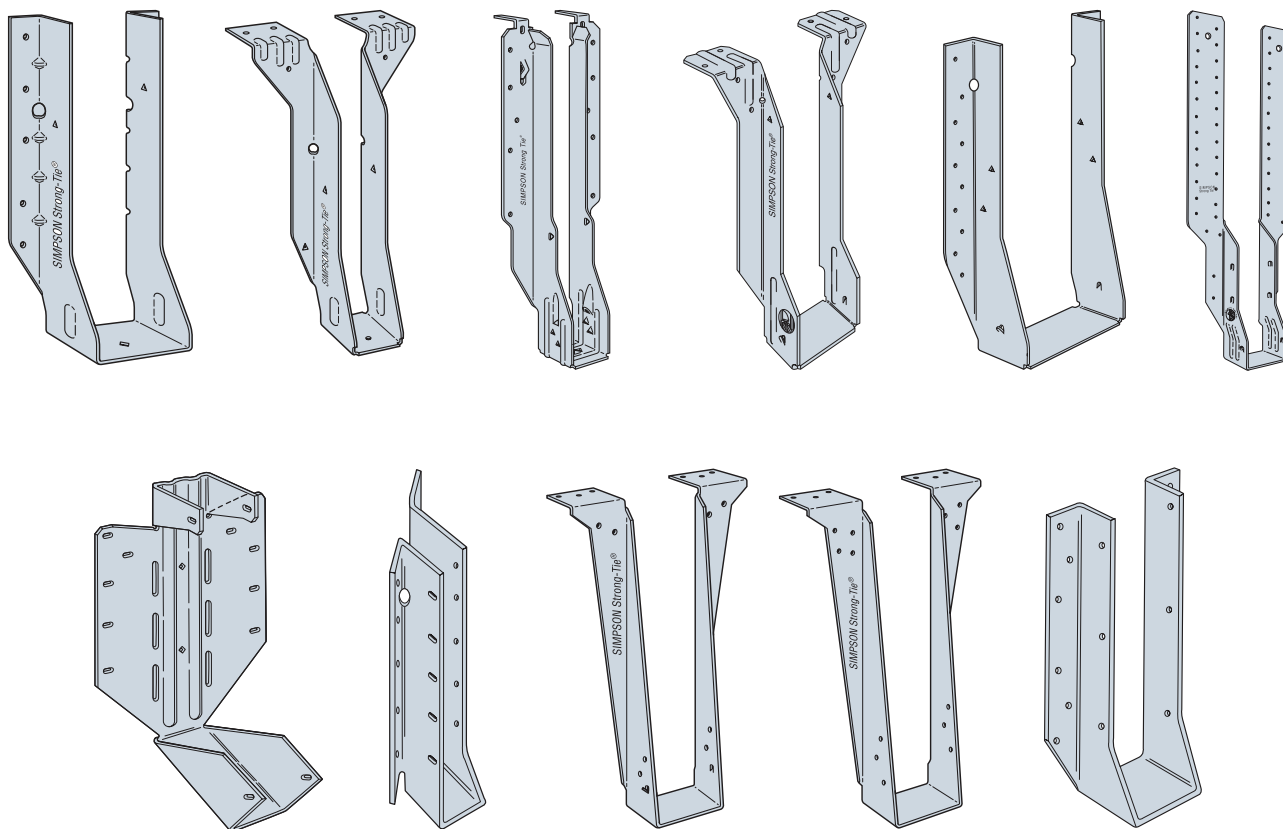
Joist Height	Top Flange							Face Mount							45° Skew																			
	Model	B Dim	Fastener Type		Uplift (115)	Down Load	DF	SPF	Model	B Dim	Fastener Type		Uplift (115)	Down Load	DF	SPF	Model	B Dim	Fastener Type		Uplift (115)	Down Load	DF	SPF										
			Header	Joist							Header	Joist							Header	Joist					Header	Joist								
Double BCI® 4500s																									Joist Width = 3½"									
9½	MIT49.5	2½	(8) 16d	(2) 10d x 1½	450	3,490	2,420	MIU3.56/9	2½	(16) 16d	(2) 10d x 1½	375	3,790	3,230	HSUR/L410	27/16	(12) 16d	(2) 10d x 1½	195	2,995	2,350													
11⅞	MIT411.88							MIU3.56/11		(20) 16d			4,550				(16) 16d																	
14	MIT414							MIU3.56/14		(22) 16d			4,930				(20) 16d																	
16	MIT416							MIU3.56/16		(24) 16d			4,930				(24) 16d																	
Double BCI® 5000s																									Joist Width = 4"									
9½	MIT4.12/9.5	2½	(8) 16d	(2) 10d x 1½	450	3,490	2,420	MIU4.12/9	2½	(16) 16d	(2) 10d x 1½	375	3,790	3,230	HSUR/L4.12/9	3	(18) 16d	(8) 16d	1,710	4,290	3,050													
11⅞	MIT4.12/11.88							MIU4.12/11		(20) 16d			4,550		(22) 16d																			
14	MIT4.12/14							MIU4.12/14		(22) 16d			4,930		(26) 16d																			
16	MIT4.12/16							MIU4.12/16		(24) 16d			4,930		(26) 16d																			
Double BCI® 60s/6000s																									Joist Width = 4½"									
9½	MIT359.5-2	2½	(8) 16d	(2) 10d x 1½	450	3,490	2,420	MIU4.75/9	2½	(16) 16d	(2) 10d x 1½	375	4,420	3,230	HSUR/L4.75/9	2½	(26) 16d	(12) 16d	2,565	5,205	4,635													
11⅞	MIT3511.88-2							MIU4.75/11		(20) 16d			4,550																					
14	MIT3514-2							MIU4.75/14		(22) 16d			4,930																					
16	MIT4.75/16							MIU4.75/16		(24) 16d			4,930																					
Double BCI® 6500s																									Joist Width = 5½"									
9½	MIT39.5-2	2½	(8) 16d	(2) 10d x 1½	450	3,490	2,420	MIU5.12/9	2½	(16) 16d	(2) 10d x 1½	375	4,420	3,230	HSUR/L5.12/9	2½	(26) 16d	(12) 16d	2,565	5,205	4,635													
11⅞	MIT311.88-2							MIU5.12/11		(20) 16d			4,550																					
14	MIT314-2							MIU5.12/14		(22) 16d			4,930																					
16	MIT5.12/16							MIU5.12/16		(24) 16d			4,930																					
Double BCI® 90s																									Joist Width = 7"									
11⅞	BA712/11.88	3	(16) 16d	(8) 10d x 1½	1,740	5,480	4,030	HU412-2	2½	(22) 16d	(8) 16d	2,455	5,780	4,690	HU412-2X¹	2½	(22) 16d	(8) 16d	2,455	3,755	3,050													
14	BA712/14									(26) 16d			6,470		6,185		HU414-2X¹																	
16	BA712/16									(26) 16d			7,025		6,185		HU414-2X¹																	

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															
Double BCI® 4500s															Joist Width = 3½"														
9½	THAI422	2½	(6) 10d	(2) 10d x 1½	—	3,000	2,385	LSSR410Z	3½	(20) 16d	(13) 10d x 1½	990	2,585	1,835															
11⅞																													
14																													
16	See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.																					
Double BCI® 5000s															Joist Width = 4"														
9½	THAI-2²	2½	(6) 10d	(2) 10d x 1½	—	2,800	2,385	LSU4.12³	3½	(24) 16d	(16) 10d x 1½	1,960	2,450	2,030															
11⅞																													
14																													
Double BCI® 60/6000s															Joist Width = 4⅝"														
9½	THAI-2²	2½	(6) 10d	(2) 10d x 1½	—	2,800	2,385	LSU3510-2³	3½	(24) 16d	(16) 10d x 1½	1,960	2,450	2,030															
11⅞																													
14																													
16	See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.																					
Double BCI® 6500s															Joist Width = 5⅝"														
9½	THAI-2²	2½	(6) 10d	(2) 10d x 1½	—	2,800	2,385	LSU5.12³	3½	(24) 16d	(16) 10d x 1½	1,285	2,600	1,845															
11⅞																													
14																													
16	See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.																					
Double BCI® 90s															Joist Width = 7"														
9½ – 16	See Canadian Wood Construction Connectors catalogue for hanger selection.							See Canadian Wood Construction Connectors catalogue for hanger selection.																					

NOTES FOR SIMPSON HANGERS ON

General Notes

- See current *Canadian Wood Construction Connectors* catalogue for Important Information and General Notes section and for hanger models, joist sizes, and header situations not shown. Also see the Simpson Strong-Tie Publication CSG-BCCANBC12 BCI I-JOISTS *Connector Selection Guide*, Limit States Design version for installation information.
- Unless otherwise noted, factored resistances (downloads) listed address hanger/header/fastener limitations assuming header material is Douglas fir-larch or spruce pine fir or LVL. Joist reaction should be checked by a qualified designer to ensure proper hanger selection.
- Factored uplift resistances (uplift) listed assume SPF joist and header and have been increased by 15% for earthquake and wind loading with no further increase allowed. Reduce loads according to code for normal duration loading such as cantilever construction.
- If hanger height is less than 60% of joist height, joist rotation may occur; see Prevent Rotation section of the Simpson guide referenced above.
- Top flange hanger configuration and thickness of top flange need to be considered for flush frame conditions, see the Simpson guide referenced above.
- For this publication, carrying members are assumed to be at least 5½" tall for top flange hangers. The horizontal thickness of the carrying member must be at least the length of nail being used or the hanger top flange dimension, whichever is greater. **Exception:** narrower carrying members may be used with face mount hangers but the horizontal thickness must be at least 1¾" for 3" (10d) nails; 2" for 3½" (16d) nails. Clinch nails on back side.
- THAI hangers in this publication are based on a "top flange" installation and require that the carrying member have a horizontal thickness of at least 2½ inches. Backer blocks are required when the header is an I-joist. Install 4 top nails and 2 face nails. THAI hangers are not rated for uplift.
- NAILS: 3½" (16d) = 0.162" dia. x 3 ½" long
3" (10d) = 0.148" dia. x 3" long
3" (10d) x 1½" = 0.148" dia. x 1½" long



Weights of Building Materials

CEILING		Pounds Per Square Foot (PSF)
Acoustical fiber tile ⁽¹⁾		1
Suspended steel channel system ⁽¹⁾		2
Suspended wood channel system		2.5
2x8 ceiling joists @ 16" o.c., R-49 insulation, ½" gypsum board		7
1" Plaster		8
½" gypsum board		2.2
⅝" gypsum board		2.75
ROOF		Pounds Per Square Foot (PSF)
Fiberglass shingles		3
Asphalt shingles ⁽¹⁾		2
Wood shingles ⁽¹⁾		3
Spanish clay tile ⁽¹⁾		19
Concrete roof tile		12
Lightweight clay tile		6
Composition Roofing:		
Three-ply ready roofing ⁽¹⁾		1
Four-ply felt and gravel ⁽¹⁾		5.5
Five-ply felt and gravel ⁽¹⁾		6
20 gage metal deck ⁽¹⁾		2.5
18 gage metal deck ⁽¹⁾		3
0.05" thick polyvinyl chloride polymer membrane ⁽⁴⁾		0.35
1" fiberglass batt insulation		0.04
1" loose fiberglass insulation		0.04
1" loose cellulose insulation		0.14
1" rigid insulation ⁽¹⁾		1.5
Blowing wool insulation R-38 (16" deep)		0.62
⅜" slate ⁽¹⁾		7
¼" slate ⁽¹⁾		10
Single-ply (no ballast) ⁽¹⁾		0.7
Single-ply (ballasted)		11
Dry gravel ⁽¹⁾		8.7
2x8 rafters @ 16" o.c., fiberglass shingles, 15# felt, ⅜" sheathing		8
Skylight: metal frame w/ ⅜" wire glass ⁽¹⁾		8
FLOOR		Pounds Per Square Foot (PSF)
1" reinforced regular weight concrete		12.5
1" plain lightweight concrete ⁽¹⁾		8
7/16" cementitious backerboard		3
Ceramic or quarry tile (¾") on ½" mortar bed ⁽¹⁾		16
Ceramic or quarry tile (¾") on 1" mortar bed ⁽¹⁾		23
1" mortar bed		12
1" slate ⁽¹⁾		15
⅜" marble tile		6
⅜" ceramic floor tile		4.7
Hardwood flooring, 7/7-in ⁽¹⁾		4
¼" linoleum or asphalt tile ⁽¹⁾		1
BCI®/AJS® joists @ 16" o.c., ¾" sheathing, ½" gypsum board		10
¾" Gyp-Crete topping		6.5
Carpet & Pad		2.0
Waterproofing Membranes		
Bituminous, smooth surface ⁽¹⁾		1.5
Liquid applied ⁽¹⁾		1
MISCELLANEOUS		Pounds Per Square Foot (PSF)
1" of sand		8
1" of water		5.2
Hay: baled, dry ⁽²⁾		15 PCF
Straw: baled, dry ⁽²⁾		8 PCF
Saturated soil (garden/landscaped roof)		135 PCF
Grand piano		1000 LBS
Hot Tub (tub & water weight)		150
Acrylic soaking tub-2 person-80 gallon capacity (tub & water weight) ⁽⁵⁾		40

NOTE:

- Include at least 1.5 PSF in all dead load summations to account for incidentals such as plumbing, ducts, light fixtures, etc.

Information from the Boise Cascade *CANADA Technical Note GE-01*.

SHEATHING		Pounds Per Square Foot (PSF)
1 1/32" or 3/8" Plywood – OSB ⁽³⁾		1.0 – 1.2
1 5/32" or 1/2" Plywood – OSB ⁽³⁾		1.4 – 1.7
1 9/32" or 5/8" Plywood – OSB ⁽³⁾		1.8 – 2.1
2 3/32" or 3/4" Plywood – OSB ⁽³⁾		2.2 – 2.5
7/8" Plywood – OSB ⁽³⁾		2.6 – 2.9
1 1/8" Plywood – OSB ⁽³⁾		3.3 – 3.6
½" cementitious backerboard		3
1 1/2" softwood T & G decking		4.6
FRAMING		Pounds Per Square Foot (PSF)
2x4 @ 16" o.c.		1.1
2x6 @ 16" o.c.		1.7
2x8 @ 16" o.c.		2.2
2x10 @ 16" o.c.		2.9
2x12 @ 16" o.c.		3.5
BCI® 4500s, 5000 or 5000s @ 12" o.c.		2.0 – 2.9
BCI® 4500s, 5000 or 5000s @ 16" o.c.		1.5 – 2.2
BCI® 4500s, 5000 or 5000s @ 19.2" o.c.		1.3 – 2.8
BCI® 4500s, 5000 or 5000s @ 24" o.c.		1.0 – 1.5
BCI® 6000 or 6000s @ 12" o.c.		2.2 – 3.4
BCI® 6000 or 6000s @ 16" o.c.		1.7 – 2.6
BCI® 6000 or 6000s @ 19.2" o.c.		1.4-2.1
BCI® 6000 or 6000s @ 24" o.c.		1.1-1.7
BCI® 60, 60s, 6500 or 6500s @ 12" o.c.		2.3 – 3.8
BCI® 60, 60s, 6500 or 6500s @ 16" o.c.		1.7 – 2.9
BCI® 60, 60s, 6000 or 6500s @ 19.2" o.c.		1.4 – 2.4
BCI® 60, 60s, 6500 or 6500s @ 24" o.c.		1.2 – 1.9
BCI® 90 or 90s @ 12" o.c.		3.9 – 4.9
BCI® 90 or 90s @ 16" o.c.		2.9 – 3.7
BCI® 90 or 90s @ 19.2" o.c.		2.4 – 3.1
BCI® 90 or 90s @ 24" o.c.		1.9 – 2.5
AJS® 140, 150, 190 or 20 @ 12" o.c.		2.2 – 3.3
AJS® 140, 150, 190 or 20 @ 16" o.c.		1.7 – 2.5
AJS® 140, 150, 190 or 20 @ 19.2" o.c.		1.4 – 2.1
AJS® 140, 150, 190 or 20 @ 24" o.c.		1.1 – 1.7
AJS® 24, 25 or 30 @ 12" o.c.		3.1 – 3.9
AJS® 24, 25 or 30 @ 16" o.c.		2.3 – 2.9
AJS® 24, 25 or 30 @ 19.2" o.c.		1.9 – 2.4
AJS® 24, 25 or 30 @ 24" o.c.		1.6 – 2.0
AJS® 24 FMJ @ 12" o.c.		3.4 – 4.3
AJS® 24 FMJ @ 16" o.c.		2.6 – 3.2
AJS® 24 FMJ @ 19.2" o.c.		2.1 – 2.7
AJS® 24 FMJ @ 24" o.c.		1.7 – 2.1
WALL		Pounds Per Square Foot (PSF)
5/16" x 7 1/2" fiber cement lap siding		3
4" clay brick ⁽¹⁾		39
¼" ceramic wall tile		3.1
1 3/4" Cultured Stone®		12
2x4 studs @ 16" o.c., ⅝" gypsum, insulation, ⅜" siding ⁽¹⁾		11
2x6 studs @ 16" o.c., ⅝" gypsum, insulation, ⅜" siding ⁽¹⁾		12
Wood or steel studs, ½" gypsum board each side ⁽¹⁾		8
Exterior stud walls w/ brick veneer ⁽¹⁾		48
Windows: glass, frame and sash ⁽¹⁾		8
Stucco		10
Log Wall: 10" diameter		26
Glass Block:		
4" Thick-standard (hollow)		20
3" Thick-standard (hollow)		16
4" Thick-thin face		30
3" Thick-solid glass block		40

(1) *Minimum Design Loads for Buildings and Other Structures*, ASCE 7-05 Table C3.1-1a.

(2) *National Farm Building Code* (Canada) 1995. Value in pounds per cubic foot (pcf), multiply by maximum height to obtain PSF.

(3) *Approximate Engineering Dead Load Weight of Wood Structural Panels*, APA EWS TT-019, 998.

(4) *Duro-Last® General Specifications*, Duro-Last® Roofing, Inc. 2005.

(5) *Kohler® Specification Sheet K-1160-GLA 02/25/2018*.

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FASTER. STRONGER. EASIER.

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