

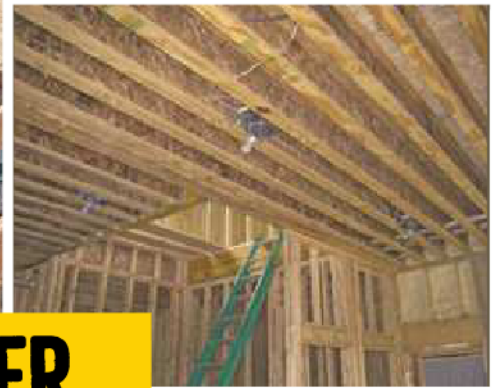


Boise Cascade[®]
ENGINEERED WOOD PRODUCTS

Reorder #MTP-E7000

BCI[®] Joists and Versa-Lam[®] LVL

EASTERN SPECIFIER GUIDE



FASTER. STRONGER. EASIER.



...make designing homes **easier.**



Architects, engineers and designers trust Boise Cascade's engineered wood products to provide a better system for framing floors, roofs and walls.

Boise Cascade's Simple Framing System® features beams, joists and rim boards that work together as a system, so you spend less time cutting and fitting. In fact, the Simple Framing System® uses fewer pieces and longer lengths than conventional framing, so you'll complete jobs in less time.

You'll Build Better Homes with the Simple Framing System®

It's easier than ever to design and build better floor systems. When you specify the Simple Framing System®, your clients will have fewer problems with squeaky floors and ceiling gypsum board cracks. The Simple Framing System® also means overall better floor and roof framing than dimension lumber allows.

Better Framing Doesn't Have to Cost More

The Boise Cascade EWP Simple Framing System® often costs less than conventional framing methods when the resulting reduced labor and material waste is considered. By ordering only what you need, crews spend less time sorting and end up with

less waste — thereby also reducing costs associated with disposal. Boise Cascade EWP products also come in longer lengths to help your clients get the job done faster, yet they cost no more.

Environmentally Sound

As an added bonus, floor and roof systems built with BCI® joists require about half the number of trees as those built with dimension lumber. This helps you design a home both you and future generations will be proud to own.

What Makes the Simple Framing System® So Simple?

✓ Floor and Roof Framing with BCI® Joists

Light in weight, but heavy-duty, BCI® joists have a better strength / weight ratio than dimension lumber. Knockouts can be removed for cross-ventilation and wiring.

✓ Ceilings Framed with BCI® Joists

The consistent size of BCI® joists helps keep gypsum board flat and free of unsightly nail pops and ugly shadows, while keeping finish work to a minimum.

✓ versa-Lam® LVL Beams for Floor and Roof Framing

These highly-stable beams are free of the large-scale defects that plague dimension beams. The result is quieter, flatter floors (no camber) and no shrinkage-related call-backs.

✓ Versa-Lam® LVL and Versa-Stud® columns for wall framing

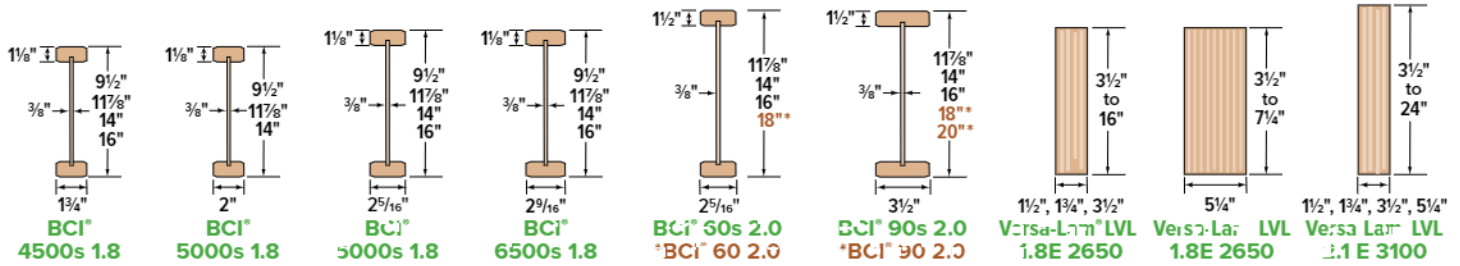
Versa-Stud® laminated veneer lumber wall framing is engineered for the high quality builder who wants:

- stronger walls to resist wind loads
- stiffer walls for a solid feel
- straight walls for a high quality finish

✓ Boise Cascade® Rimboard

Boise Cascade Engineered Wood Products offers engineered rim board products that are compatible with BCI® joists (check supplier or Boise Cascade EWP representative for availability). The rim board works with BCI® joists to provide a solid connection at critical floor/wall intersections.

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Some products may not be available in all markets, deep depth BCI® 60 and BCI 90 joists are special order only. Contact your Boise Cascade EWP representative for availability. BCI® joists and Versa-Lam® LVL products shall be installed in dry-use applications only, per their respective ICC-ES/APA ESR evaluation reports.



BCI® Joist 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 graded 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 and listed in the governing code evaluation service's 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 BCI® joists shall be evaluated by a model code evaluation service.

About Floor Performance

Homeowner 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 flanges of the joists.

The floor span tables listed below offer three very different performance options, based on performance requirements of the homeowner.

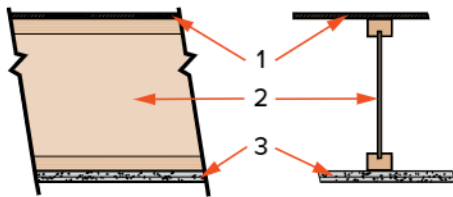
Joist Depth	BCI® Joist Series	★★★ THREE STAR ★★★					★★★★ FOUR STAR ★★★★					CAUTION	★ MINIMUM STIFFNESS ALLOWED BY CODE ★					CAUTION													
		Live Load deflection limited to L/480: The common industry and design community standard for residential floor joists, 23% stiffer than L/360 code minimum. However, floor performance may still be an issue in certain applications, especially with 9½" and 11½" deep joists without a direct-attached ceiling.										Live Load deflection limited to L/960+: In addition to providing a floor that is 100% stiffer than the three star floor, field experience has been incorporated into the values to provide a floor with a premium performance level for the more discriminating homeowner.										Live Load deflection limited to L/360: Floors that meet the minimum building code L/360 criteria are structurally sound to carry the specified loads; however, there is a much higher risk of floor performance issues. This table should only be used for applications where floor performance is not a concern.									
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	32" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	32" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	32" o.c.															
9½"	4000s 1.8	16'-11"	15'-6"	14'-8"	13'-7"	11'-9"	11'-6"	11'-6"	10'-0"	10'-0"	9'-7"	18'-3"	16'-8"	15'-3"	13'-7"	11'-9"															
	5000s 1.8	17'-6"	16'-0"	15'-2"	14'-1"	12'-6"	11'-6"	11'-6"	10'-0"	10'-0"	9'-11"	19'-4"	17'-9"	16'-1"	14'-7"	12'-5"															
	6000s 1.8	18'-2"	16'-8"	15'-8"	14'-10"	13'-4"	11'-6"	11'-6"	10'-0"	10'-0"	10'-0"	20'-2"	17'-5"	17'-10"	15'-9"	13'-8"															
	6000s 1.8	18'-8"	17'-1"	16'-11"	15'-8"	13'-8"	11'-6"	11'-6"	10'-0"	10'-0"	10'-0"	20'-8"	18'-1"	17'-10"	16'-7"	14'-3"															
11½"	4500s 1.8	20'-0"	19'-1"	17'-3"	15'-5"	13'-10"	15'-6"	14'-3"	13'-5"	12'-6"	11'-4"	21'-10"	19'-11"	17'-3"	15'-5"	13'-4"															
	5000s 1.8	20'-9"	19'-0"	17'-11"	16'-7"	13'-4"	15'-6"	14'-3"	13'-11"	12'-11"	11'-9"	23'-0"	20'-4"	18'-6"	16'-7"	13'-4"															
	6000s 1.8	21'-7"	19'-8"	18'-7"	17'-10"	14'-10"	15'-6"	15'-4"	14'-5"	13'-5"	12'-1"	23'-10"	21'-10"	20'-0"	17'-11"	14'-10"															
	6000s 1.8	22'-2"	20'-3"	19'-10"	17'-10"	14'-10"	16'-0"	15'-10"	14'-11"	13'-10"	12'-7"	24'-6"	21'-5"	21'-1"	18'-10"	14'-10"															
	60s .0	23'-7"	21'-6"	20'-4"	18'-11"	16'-4"	18'-0"	16'-9"	15'-9"	14'-5"	13'-3"	26'-1"	23'-10"	22'-6"	21'-0"	16'-4"															
	60s .0	26'-7"	24'-3"	22'-10"	21'-3"	19'-4"	19'-0"	18'-10"	17'-10"	16'-5"	14'-10"	29'-5"	26'-10"	25'-3"	23'-6"	19'-4"															
13"	4500s 1.8	21'-9"	20'-7"	18'-9"	16'-9"	13'-11"	17'-10"	16'-3"	15'-10"	14'-3"	13'-0"	23'-10"	20'-7"	18'-9"	16'-9"	13'-11"															
	5000s 1.8	23'-7"	21'-7"	20'-10"	18'-0"	13'-11"	18'-6"	16'-10"	15'-11"	14'-9"	13'-5"	25'-7"	22'-4"	20'-2"	18'-0"	13'-11"															
	6000s 1.8	24'-6"	22'-5"	21'-2"	19'-6"	14'-5"	19'-10"	17'-6"	16'-6"	15'-4"	13'-11"	27'-1"	23'-11"	21'-10"	19'-3"	15'-5"															
	6500s 1.8	25'-2"	23'-0"	21'-8"	20'-2"	15'-5"	19'-8"	17'-11"	16'-11"	15'-8"	14'-3"	27'-9"	25'-2"	22'-11"	20'-6"	15'-5"															
	60s .0	26'-9"	24'-5"	23'-0"	21'-5"	16'-4"	20'-11"	19'-0"	17'-11"	16'-7"	14'-1"	29'-7"	27'-0"	25'-6"	21'-10"	16'-4"															
	60s .0	30'-1"	27'-5"	25'-10"	23'-0"	18'-6"	23'-6"	21'-4"	20'-0"	18'-6"	16'-9"	33'-3"	30'-4"	28'-7"	26'-0"	19'-6"															
15"	4500s 1.8	25'-2"	23'-0"	21'-1"	17'-11"	14'-1"	13'-9"	16'-0"	17'-3"	15'-10"	14'-1"	25'-5"	22'-0"	20'-7"	17'-11"	14'-1"															
	6000s 1.8	27'-0"	24'-9"	23'-4"	20'-10"	15'-9"	21'-2"	19'-10"	18'-2"	16'-11"	14'-4"	29'-6"	25'-6"	23'-4"	20'-10"	15'-9"															
	6500s 1.8	27'-9"	25'-1"	23'-11"	21'-1"	15'-9"	21'-9"	19'-9"	18'-8"	17'-10"	17'-7"	30'-8"	26'-11"	24'-6"	21'-1"	15'-9"															
	60s .0	29'-7"	27'-0"	25'-6"	21'-10"	16'-4"	23'-2"	21'-1"	19'-10"	18'-5"	15'-4"	32'-8"	29'-10"	27'-4"	21'-10"	16'-4"															
	60s .0	33'-4"	30'-4"	28'-7"	26'-2"	19'-7"	26'-0"	23'-7"	22'-2"	20'-6"	17'-7"	36'-10"	33'-7"	31'-8"	26'-2"	19'-7"															

- Span table is based on a residential floor load of 40 psf live load and 10 psf dead load (12 psf dead load for joists 2.0 joists).
- Span values assume 23/32" minimum plywood/OSB rated sheathing is glued and nailed to joists for continuous action (joists spaced at 32" o.c. require sheathing rated for such spacing, such as 7/8" plywood/OSB).
- Span values represent the most restrictive of simple or multiple span applications. Analyze multiple span joists with BC Calc® sizing software if the length of any span is less than half the length of an adjacent span.
- Span values are the maximum allowable clear distance between supports.

- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- Floor tile will increase dead load and may require specific deflection limits, contact Boise Cascade EWP Engineering for further information.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® sizing software.

(Gold shaded values may not satisfy the requirements of the North Carolina State Building Code. Refer to the THREE STAR table when spans exceed 20 feet.)

One-Hour Fire Resistance Assembly (ICC-ES® /APA® ESR-1336)



See the US version of the Boise Cascade Fire Design & Installation Guide for specific assembly information and other fire resistance assemblies and details.

FIRE ASSEMBLY COMPONENTS

- 23/32" thick tongue and groove sheathing (exterior glue), installed with long edge perpendicular to joist length staggered one joist spacing with adjacent sheets, and glued to joists with construction adhesive.
- BCI® joists at 24" o.c. or less.
- Two layers 5/8" Type X or two layers 1/2" Type C gypsum board, installed per figures 2 or 3 of ICC-ES® /APA® ESR-1336.

SOUND ASSEMBLY COMPONENTS (when constructed with resilient channels)

Add carpet & pad to fire assembly	STC=54	IIC=68 or
Add 3 1/2" glass fiber insulation to fire assembly	STC=55	IIC=40 or
Add an additional layer of minimum 5/8" sheathing and 9 1/2" glass fiber insulation to fire assembly	STC=61	IIC=50

NOTE

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 MINIMUM SPAN BRACING IS REQUIRED FOR ECI JOISTS

FOR INSTALLATION STABILITY
Temporary strut lines (1x4 min.) @ 8' o.c. max. Fasten at each joist with 2-8d nails minimum.

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

F01 F02

BCI® rim joist

F07 F07A F56

BC Rimboard; see Rim Board Details in this guide.

F05

For information on load bearing cantilevers, see Cantilever Details in this guide.

F06 F09

BCI® blocking or 2x4 "squash" block on each side is required when supporting a load-bearing wall above.

1½" knockout holes at approximately 12" o.c. are pre-punched.

Versa-Lam® LVL header or BCI® header

F27A F10 F16D

F58

F15B

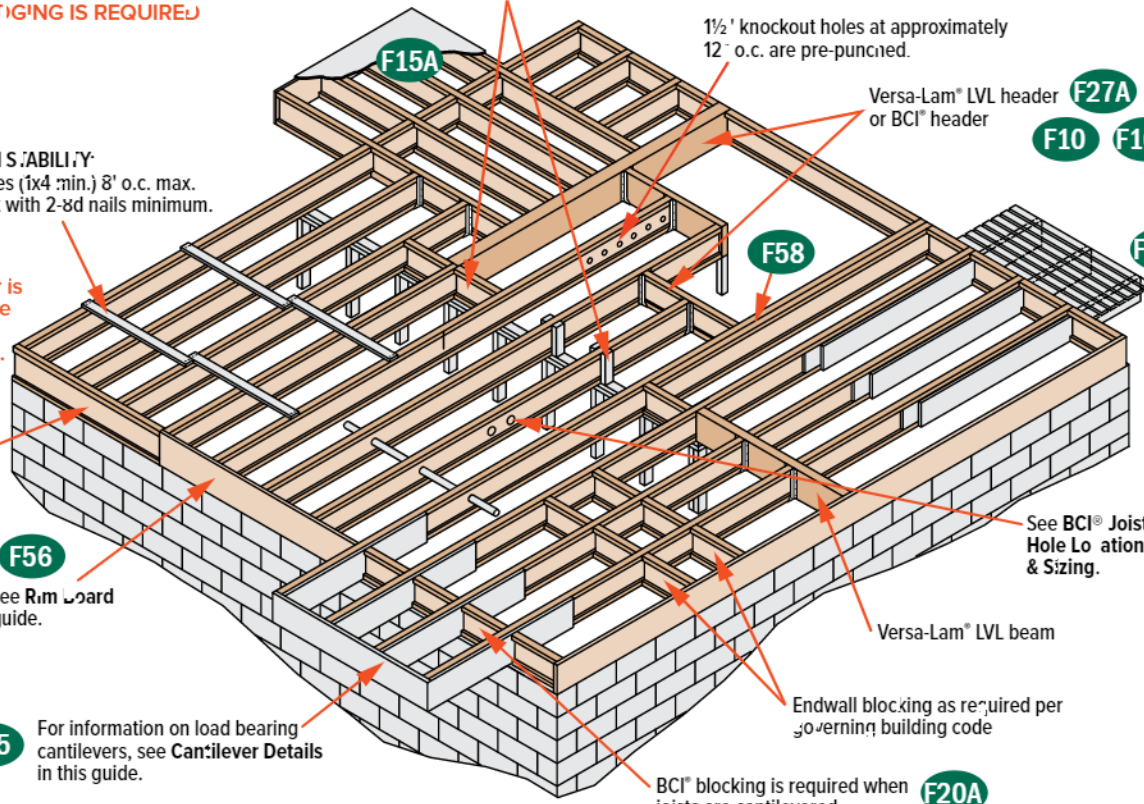
See BCI® Joist Hole Locations & Sizing.

Versa-Lam® LVL beam

Endwall blocking as required per governing building code

BCI® blocking is required when joists are cantilevered. **F20A**

When installing Boise Cascade EWP products with treated wood, use only connectors/fasteners that are 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 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 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.

PRODUCT STORAGE

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.

BCI® and AJS® joists and Versa-Lam® LVL must be wrapped, covered, and stored off of the ground on stickers at all times prior to installation. BCI® and AJS® joists and Versa-Lam® LVL 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.

Failure to correctly store, use, or install BCI® and AJS® joists and Versa-Lam® LVL in accordance with the Boise Cascade EWP Installation Guide will void the limited warranty.



END BEARING DETAILS

F07

Dimension lumber is not suitable for use as rimboard with BC® joists.

BC Rimboard.
Nail to BC® joists with 2 1/2" x 8d nails in each flange.

F07A

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

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

BC Rimboard

F01

BC® joist blocking.

F02

BC® rim joist.
BC® rim joist requires 2x6 wall for minimum bearing.

F27A

Top flange or face mount joist hanger.
Versa-Lam® LVL

F52

One 8d nail each side at bearing.
1 1/2" minimum bearing length

To limit splitting flange, start nails at least 1 1/2" 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

Boise Cascade® rimboard

NOTE: BC® floor joist must be designed to carry wall above when no studs over wall below

Blocking required under braced wall perpendicular walls, consult design professional or record.

INTERMEDIATE BEARING DETAILS

F06

For load bearing wall above (stacked over wall below)

BC® joist blocking

F09

Blocking may be required at intermediate bearings for floor diaphragm per IRC in high seismic areas, consult local building official.

Load bearing wall above (stacked over wall below)

2x block.

Double Squash Block Vertical Load (lb/ft)

Size	Joist Spacing			
	12"	16"	19 2"	24"
2x4	4463	3347	2789	2231
2x6	7013	5259	4383	3506

• Squash blocks are to be in full contact with upper floor and lower wall plates.
• Capacities shown are for double squash blocks at each joist, SPF or better.

F10

Backer block, min. 12" wide; use ten 10d nails.
Joist hanger
Filler block, nail with ten 10d nails

Backer block required when top flange hanger load exceeds 250 lb. Install tie to top flange. All face mount hangers require backer blocks on both sides of supporting joist's web.

F58 Double BC® Joist Connection

Filler block, if required
Web filler nailing

• Filler block: not required when all loads are top loaded and evenly applied to each ply (except 19 joist).
• Side load: or uneven top loads require filler blocks.
• Fasten floor sheathing to each ply per diaphragm nailing schedule.

See BC Trench Nailing for more information on nailing and filler block requirement.

F05 Structural Panel Reinforcement (when required).

BC® Joist blocking required for cantilever.

For load bearing cantilever, see pages 8 and 9. Uplift on backspan shall be considered in all cantilever designs.

BC® Joist Slope Cut Reinforcement

Detail below requires original slope shear/reaction value to cut end of BC® joist. BC® joists: had not be used as a collar or after tension tie.

2 x 6 min. refer. Reft. shall be supported by ridge beam or other upper bearing support

Heel depth (see table below)

2x blocking required at bearing (not shown for clarity).
3/8" min. plywood/OSB sheathing reinforcement.
In all reinforcement with grain horizontal, install on both sides of joist, tight to bottom flange. Leave minimum 1/4" gap between reinforcement and bottom of top flange. Apply construction adhesive to contact surfaces and attach with 3 rows of minimum 10d nails at 6" o.c. Alternate nailing from each side and clinch.

End Wall Bearing	Minimum Heel Depth					
	Roof Pitch					
	12/12	7/12	8/12	9/12	10/12	12/12
2 x 4	3 3/8"	4 1/4"	4 3/4"	4 3/4"	4 3/4"	4 3/4"
2 x 6	3 3/8"	3 3/8"	2 5/8"	2 3/4"	2 3/4"	2 3/4"

LATERAL SUPPORT

- BC® joists shall be laterally supported at the ends with hangers, rimboard, BC® rim joist or blocking panels. BC® blocking panels or rimboard are required at cantilever supports.
- Blocking may be required at intermediate bearings for floor diaphragm per IRC in high seismic areas, consult local building official.

MINIMUM BEARING LENGTH FOR BC® JOISTS

- Minimum end bearing: 1 1/2" for all BC® joists. 3 1/2" is required at cantilever and intermediate supports.
- Longer bearing lengths allow higher reaction values. Refer to the building code evaluation report or the BC calculator software

NAILING REQUIREMENTS

- BC® rim joist, rim board or closure panel to BC® joist
 - Rim or closure panel: Two nails, one each into top and bottom flange. Up to 1 1/2" thick rim, use 8d x 2 1/2" nails; for 1 3/4" thick rim, use 1cd box x 3" nails.
 - BC® 4500s/5000s rim joist: Two 10d box nails, one each in the top and bottom flange.
 - BC® 6000s/60s rim joist: Two 1cd box nails, one each in the top and bottom flange.
 - BC® 4500s/90s rim joist: Toe-nail top flange to rim joist with two 10d box nails, one each side of flange.
- BC® rim joist, rim board or BC® blocking panel to support:
 - Min. 8d nails @ 6" o.c. per IRC®.
 - Connection per design professional of record's specification for shear transfer.
- BC® joist to support:
 - Two 8d nails, one on each side of the web, placed 1 1/2" minimum from the end of the BC® joist to limit splitting

WEATHERING TO BC® JOIST

- Prescriptive residential floor sheathing nailing requires 8d common nails at 6" o.c. on edges and at 12" o.c. in the field (IRC® Table R602.3(1)).
- See closest allowable nail spacing limits on page 24 for floor diaphragm nailing specified at closer spacing than IRC®.
- For full lateral stability, maximum nail spacing for bracing is 18" for BC® 4500s and 5000s, and 24" for larger BC® joist series.
- 14 gauge staples may be substituted for 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.

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 1/2" wood panels
5000s	3/4" or 1/2" wood panels	Two 3/4" wood panels or 2 x 1/2" wood panels
6000s	1 1/8" or two 1/2" wood panels	2 x 1 1/8" or 1 1/2" wood panel
6500s	1 1/8" or two 5/8" wood panels	2 x 1 1/8" or 3/4" wood panel
60s	1 1/8" or two 1/2" wood panels	2 x 1 1/8" or 1 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.

WEB STIFFENER REQUIREMENTS

- See Web Stiffener Requirements section of this guide

PROTECT BC® JOISTS FROM THE WEATHER

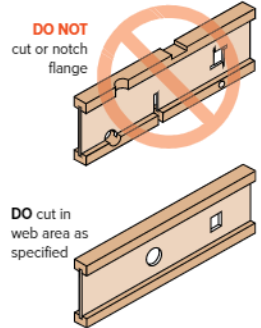
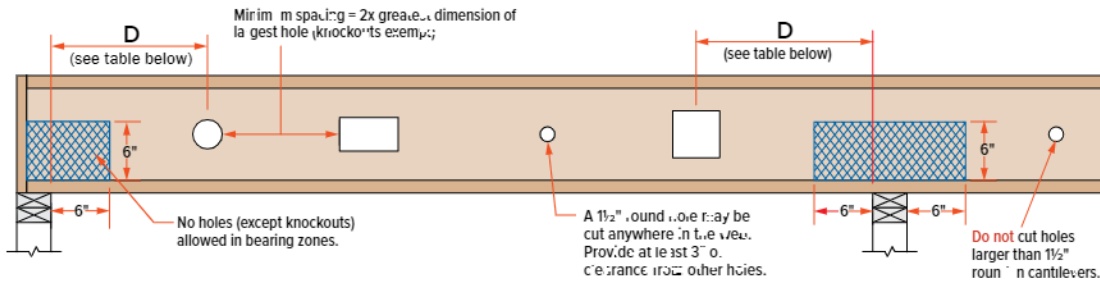
- BC® joists are intended only for applications that provide permanent protection from the weather. Bundles of product should be covered and stored off the ground on site.

BC® RIM JOISTS AND BLOCKING

Depth (in)	Series	Vertical Load Capacity (plf)	
		No W.S. (1)	W.S. (2)
9 1/2"	4500s, 5000s, 6000s, 6500s	2300	N/A
	4500s, 5000s, 6000s, 6500s	2150	N/A
11 1/8"	60s, 90s	2500	N/A
	4500s, 5000s, 6000s, 6500s	2000	N/A
14"	60s, 90s	2400	N/A
	4500s, 6000s, 6500s	1900	2500
16"	4500s, 6000s, 6500s	2300	2700

- (1) No web stiffeners required.
 (2) Web stiffeners required at each end of blocking, values not applicable to rim joists.
 N/A: Not applicable

BCI® joists are manufactured with 1½" round perforated knockouts in the web at approximately 12" on center.



The minimum distance from support (shown in table below) is required for all holes greater than 1½".

MINIMUM DISTANCE (D) FROM ANY SUPPORT TO THE CENTERLINE OF THE HOLE																
Round Hole Diameter	2"	3"	4"	5"	6"	6½"	7"	8"	8¾"	9"	10"	11"	12"	13"		
Rectangular Hole Side:	-	-	-	3"	5"	6"	7"	-	-	-	-	-	-	-		
Any 9½" Joist	Span:	8'	1'-0"	1'-1"	1'-5"	2'-1"	2'-9"	3'-1"	3'-5"							
		12'	1'-0"	1'-2"	2'-2"	3'-2"	4'-2"	4'-8"	5'-2"							
		16'	1'-0"	1'-7"	2'-11"	4'-3"	5'-7"	6'-3"	6'-11"							
Round Hole Diameter:	2"	3"	4"	5"	6"	6½"	7"	8"	8¾"	9"	10"	11"	12"	13"		
Rectangular Hole Side:	-	-	-	2"	3"	3"	5"	7"	8"	-	-	-	-	-		
Any 11½" Joist	Span:	8'	1'-0"	1'-1"	1'-5"	1'-10"	2'-4"	2'-7"	2'-10"	3'-4"	3'-9"					
		12'	1'-0"	1'-4"	2'-1"	2'-10"	3'-7"	3'-11"	4'-3"	5'-0"	5'-8"					
		16'	1'-0"	1'-10"	2'-10"	3'-9"	4'-9"	5'-3"	5'-9"	6'-9"	7'-7"					
		20'	1'-1"	2'-3"	3'-6"	4'-9"	5'-11"	6'-7"	7'-2"	8'-5"	9'-6"					
Round Hole Diameter:	2"	3"	4"	5"	6"	6½"	7"	8"	8¾"	9"	10"	11"	12"	13"		
Rectangular Hole Side:	-	-	-	-	2"	3"	3"	5"	6"	6"	8"	9"	-	-		
Any 14" Joist	Span:	8'	1'-0"	1'-1"	1'-2"	1'-3"	1'-8"	1'-10"	2'-1"	2'-6"	2'-10"	2'-11"	3'-4"	3'-8"		
		12'	1'-0"	1'-1"	1'-3"	1'-10"	2'-6"	2'-10"	3'-1"	3'-9"	4'-3"	4'-4"	5'-0"	5'-7"		
		16'	1'-0"	1'-1"	1'-8"	2'-6"	3'-4"	3'-9"	4'-2"	5'-0"	5'-8"	5'-10"	6'-8"	7'-5"		
		20'	1'-0"	1'-1"	2'-1"	3'-2"	4'-2"	4'-8"	5'-2"	6'-3"	7'-2"	7'-3"	8'-4"	9'-4"		
		24'	1'-0"	1'-4"	2'-6"	3'-9"	5'-0"	5'-8"	6'-3"	7'-6"	8'-7"	8'-9"	10'-0"	11'-2"		
Round Hole Diameter:	2"	3"	4"	5"	6"	6½"	7"	8"	8¾"	9"	10"	11"	12"	13"		
Rectangular Hole Side:	-	-	-	-	-	2"	3"	5"	5"	6"	8"	9"	10"			
Any 16" Joist	Span:	8'	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-3"	1'-3"	1'-7"	1'-11"	2'-0"	2'-5"	2'-9"	3'-2"	3'-7"
		12'	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-6"	1'-10"	2'-5"	2'-11"	3'-0"	3'-7"	4'-2"	4'-9"	5'-4"
		16'	1'-0"	1'-1"	1'-2"	1'-2"	1'-8"	2'-1"	2'-6"	3'-3"	3'-11"	4'-0"	4'-10"	5'-7"	6'-4"	7'-2"
		20'	1'-0"	1'-1"	1'-2"	1'-2"	2'-1"	2'-7"	3'-1"	4'-1"	4'-11"	5'-1"	6'-0"	7'-0"	8'-0"	8'-11"
		24'	1'-0"	1'-1"	1'-2"	1'-4"	2'-6"	3'-1"	3'-9"	4'-11"	5'-11"	6'-1"	7'-3"	8'-5"	9'-7"	10'-9"

HOW TO USE THIS TABLE:

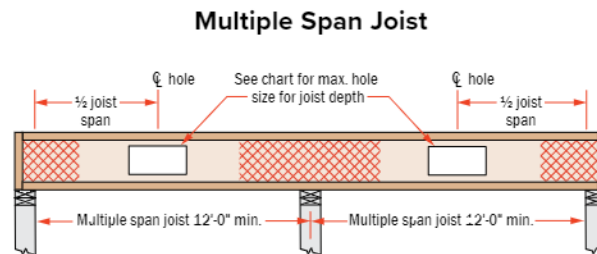
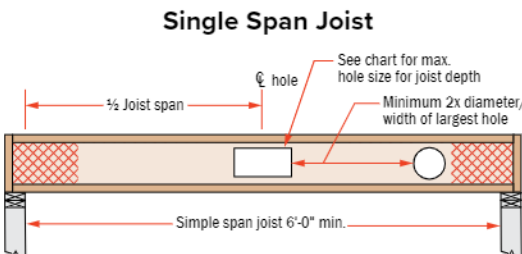
- Select a table row based on joist depth and the actual joist span rounded up to the next span shown in the table.
- Scan across the row to the column for the appropriate round hole diameter or rectangular hole side. Use the longest side of a rectangular hole.
- The table value shown is the closest that the centerline of the hole may be to the centerline of the nearest support.

TABLE NOTES:

- The entire web may be cut out. **DO NOT** cut joist flanges. Rules apply to either single or multiple joists in repetitive member conditions.
- For multiple holes, the amount of uncut web between holes must equal at least twice the diameter (or longest side) of the largest hole.
- 1½" round knockouts in the web may be removed by using a short piece of metal pipe and hammer.
- Holes may be positioned vertically in the web, provided they don't extend into either flange.
- This table was designed to apply *only* to design conditions covered by uniform load PLF tables shown in this guide. Use BC Calc® software to check other hole sizes or holes under other design conditions, including joists supporting concentrated loads. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.

Large Rectangular Holes in BCI® Joists

Hole sizes in table below are based on maximum uniform load of 40 psf live load and 10 psf dead load, at maximum spacing of 24" on-center.

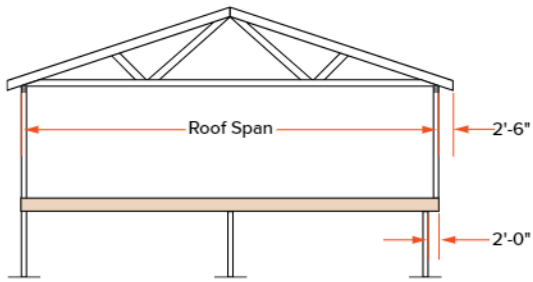


MAXIMUM HOLE SIZE

Joist Depth	Simple Span	Multiple Span
9½"	6" x 14"	6" x 12"
11½"	7" x 16" 8" x 15"	8" x 12"
14"	9" x 16" 10" x 15"	8" x 15"
16"	9" x 18" 11" x 16"	10" x 14"

Additional holes may be cut in the web provided they meet the specifications shown in the **Minimum Distance** hole chart above or as allowed using BC Calc® sizing software.

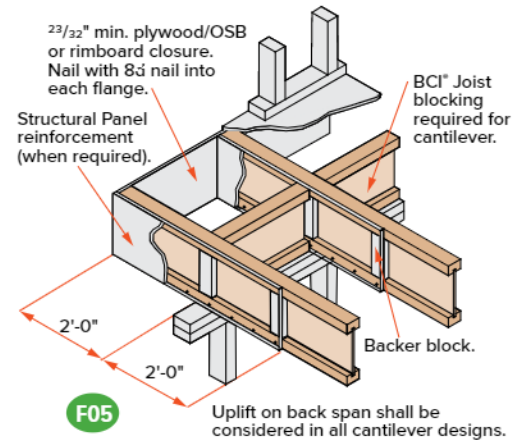
Larger holes may be possible for either single or multiple span joists; use BC Calc® software for specification analysis.



The tables and details on pages 8 and 9 indicate the type of reinforcement, 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. However, longer cantilevers with lower loads may be allowable without reinforcement. Analyze specific applications with the EC Calc® software.

PLYWOOD / OSB REINFORCEMENT (If required per table on page 8 or per BC Calc® Analy is)

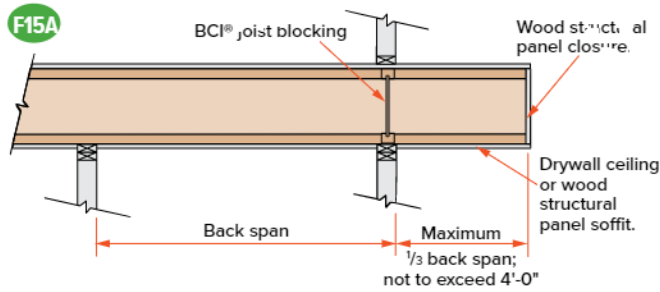
- 1/2" Min x 48" long plywood / OSB rated sheathing must match the full depth of the BCI® joist. Nail to the BCI® joist with 8d nails at 6" o.c. and nail with 4-8d nails into backer block. When reinforcing both sides, stagger nails to limit splitting. Install with horizontal face grain.
- The tables on page 8 assume a wall weight of 100 plf, in addition to the roof loading shown. Applications with loading that exceeds the loads shown shall be analyzed with BC Calc® software.
- These requirements assume a 100 PLF wall load. Additional support may be required for other loadings, see BC Calc® software.



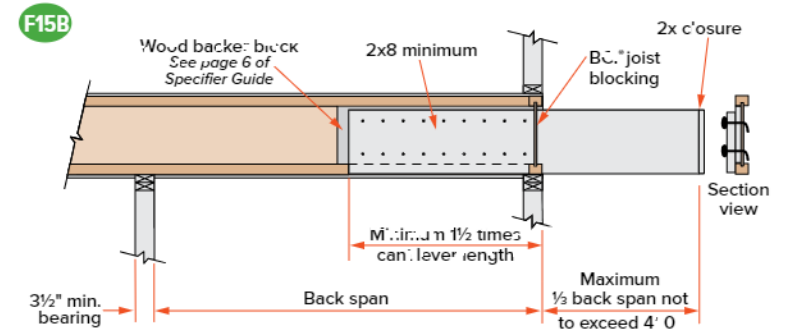
Non-Load-Bearing Wall Cantilever Details

BCI® Joists are intended only for applications that provide permanent protection from the weather. Impervious moisture barrier systems shall be detailed and installed in details F15A and F15B in accordance with 2018 IRC Sections 107.2.5 and 110.3.6.

Fasten the 2x8 minimum to the BCI® joist by nailing through the backer block and joist web with 2 rows of 10d nails at 6" on-center. Clinch all nails. For BCI® 9G joists, nail each side with 2 rows (4 rows total) of 10d nails at 6" on-center.

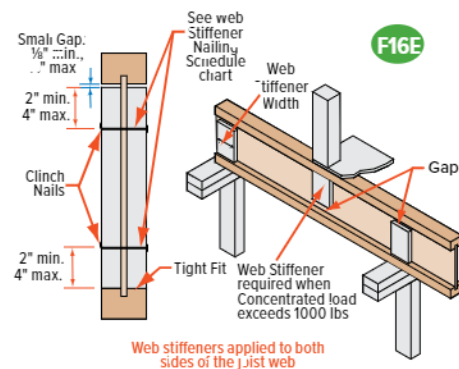


Analyze BCI® joist cantilever condition with BC Calc® software.



- Loading shall not exceed 60 psf live load and 10 psf dead load. At least three joist members shall be present and spaced at 24" o.c. or less.
- Lumber joist shall be No. 2 Dense Southern Pine, No. 2 SPF, No. 2 Hem-fir, or No. 2 Douglas fir, or higher grade.
- Provide positive drainage, durable materials, and venting as required in 2018 IRC sections 2304.12.2.5 and 2304.12.2.6. Lumber joist shall be sloped.

Web Stiffener Requirements



Web Stiffener Specifications			
BCI® Joist Series	For Structural Capacity (Min Thick)	Lateral Restraint in Hanger	Minimum Width
4500s	3/8"	5/8"	2 5/16"
5000s	5/8"	3/4"	2 5/16"
6000s	3/4"	7/8"	2 5/16"
6500s	3/4"	1" or 1 1/8"	2 5/16"
60s	3/4"	7/8"	2 5/16"
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. Web stiffeners may be required with certain sloped or curved hangers or to achieve uplift values. Refer to the hanger manufacturer's installation requirements.
- Web stiffeners are always required in certain roof applications. See Roof Framing details on page 14.
- Web stiffeners are always required under concentrated loads that exceed 1000 pounds. Install the web stiffeners snug to the top flange in this situation. Follow the nailing schedule for intermediate bearings.
- Web stiffeners may be cut from structural rated wood panels, engineered rimboard or 2x lumber (BCI® 90s only).
- For Structural Capacity: Web stiffeners needed to increase the BCI® joist's reaction capacity at a specific bearing location.
- Lateral Restraint in Hanger: Web stiffeners required when hanger does not laterally support the top flange (e.g., adjustable height hangers). Web stiffeners may be of multiple thickness (e.g., BCI® 6500s, double 1/2" panel OK).
- Web stiffeners may be used to increase allowable reaction values. See BCI® Design Properties on page 24 or the BC Calc® software.

Web Stiffener Nailing Schedule			
BCI® Joist Series	Joist Depth	Bearing Location	
		End	Intermediate
4500s	9 1/2"	2-3d	2-8d
	11 1/8"	2-8d	3-8d
	14"	2-3d	5-8d
	16"	2-8d	6-8d
5000s	9 1/2"	2-3d	2-8d
	11 1/8"	2-3d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6000s	9 1/2"	2-8d	2-8d
	11 1/8"	2-3d	3-8d
	14"	2-8d	5-8d
	16"	2-3d	6-8d
6500s	9 1/2"	2-3d	2-8d
	11 1/8"	2-3d	3-8d
	14"	2-3d	5-8d
	16"	2-3d	6-8d
60s	11 1/8"	2-8d	3-8d
	14"	2-3d	5-8d
	16"	2-3d	6-8d
90s	11 1/8"	5-16d	5-16d
	14"	5-16d	5-16d
	16"	5-16d	6-16d

Allowable Uniform Floor Load (in pounds per lineal foot (PLF))

100% Load Duration

Span Length	BCI® 4500s 1.8 Joist 1¾" Flange Width								BCI® 5000s 1.8 Joist 2" Flange Width					
	9½"		11⅞"		14"		16"		9½"		11⅞"		14"	
	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load
6	-	260	-	300	-	313	-	316	-	280	-	300	-	313
7	-	240	-	257	-	268	-	271	-	240	-	257	-	268
8	-	210	-	225	-	235	-	237	-	210	-	225	-	235
9	-	186	-	200	-	208	-	211	-	186	-	200	-	208
10	147	163	-	180	-	188	-	190	163	168	-	180	-	188
11	113	152	-	163	-	170	-	172	126	152	-	163	-	170
12	89	131	144	150	-	156	-	158	99	140	-	150	-	156
13	71	111	115	138	-	144	-	146	79	128	129	138	-	144
14	57	96	94	123	-	134	-	135	64	111	105	128	-	134
15	47	83	77	107	112	125	-	126	53	96	86	120	-	125
16			64	94	93	112	-	118	44	85	72	108	104	117
17			54	83	79	99	105	111			61	96	88	110
18			46	74	67	88	89	100			51	86	75	101
19					57	79	76	90			44	77	64	91
20					49	71	66	81					55	82
21					43	65	57	74					48	74
22							50	67					42	68
23							44	61						
24														
25														

- Total Load values are limited by shear, moment, or deflection equal to $L/240$
- Live Load values are limited by deflection equal to $L/480$. For deflection limits of $L/360$ and $L/360$, multiply the Live Load values by 1.33 and 0.50 respectively.
- Both the Total Load and Live Load columns must be checked. Where a Live Load value is not shown, the Total Load value will control.
- Table values apply to either simple or multiple span joists. Span is measured center to center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.

Table values do not consider composite action from gluing and nailing floor sheathing (composite action is considered in floor span tables on page 4).

Total Load values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.

- For assistance with floor design, consult the section *About Floor Performance* on page 4.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.

Allowable Uniform Floor Load
(in pounds per lineal foot (PLF))

100% Load Duration																	
Span Length	BCI® 6000s 1.8 Joist 2 ⁵ / ₁₆ " Flange Width								BCI® 6500s 1.8 Joist 2 ³ / ₁₆ " Flange Width								
	9 ¹ / ₂ "		11 ⁷ / ₈ "		14"		16"		9 ¹ / ₂ "		11 ⁷ / ₈ "		14"		16"		
	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	
6	-	320	-	333	-	346	-	353	-	320	-	333	-	346	-	353	
7	-	274	-	285	-	297	-	302	-	274	-	285	-	297	-	302	
8	-	240	-	250	-	260	-	265	-	240	-	250	-	260	-	265	
9	-	213	-	222	-	231	-	235	-	213	-	222	-	231	-	235	
10	183	192	-	200	-	208	-	212	-	192	-	200	-	208	-	212	
11	141	174	-	181	-	189	-	192	153	174	-	181	-	189	-	192	
12	112	160	-	166	-	173	-	176	121	160	-	166	-	173	-	176	
13	89	147	144	153	-	160	-	163	97	147	-	153	-	160	-	163	
14	73	129	117	142	-	148	-	151	79	137	129	142	-	148	-	151	
15	60	112	97	133	-	138	-	141	65	124	106	133	-	138	-	141	
16	50	98	81	125	117	130	-	132	54	109	89	125	127	130	-	132	
17	42	84	68	112	99	122	-	124	46	92	75	117	107	122	-	124	
18			58	100	84	115	112	117			64	110	91	115	-	117	
19			50	89	72	106	96	111			54	99	78	109	104	111	
20			43	81	62	96	83	106			47	89	68	104	90	106	
21					54	87	72	99			41	81	59	96	78	100	
22					47	79	63	90					51	88	69	96	
23					42	72	56	83					45	80	60	92	
24							49	76					40	74	53	84	
25							44	70							47	77	
26															42	72	
27																	
28																	
29																	
30																	

- Total Load values are limited by shear, moment, or deflection equal to L/240.
- Live Load values are limited by deflection equal to L/480. For deflection limits of L/360 and L/960, multiply the Live Load values by 1.33 and 0.50 respectively.
- Both the Total Load and Live Load columns must be checked. Where a Live Load value is not shown, the Total Load value will control.
- Table values apply to either simple or multiple span joists. Span is measured center to center of the minimum required bearing length. Analyze multiple span joists with the *BC Calc*® software if the length of any span is less than half the length of an adjacent span.
- Table values do not consider composite action from gluing and nailing floor sheathing (composite action is considered in floor span tables on page 4).
- Total Load values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- For assistance with floor design, consult the section *About Floor Performance* on page 4.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the *BC Calc*® software.

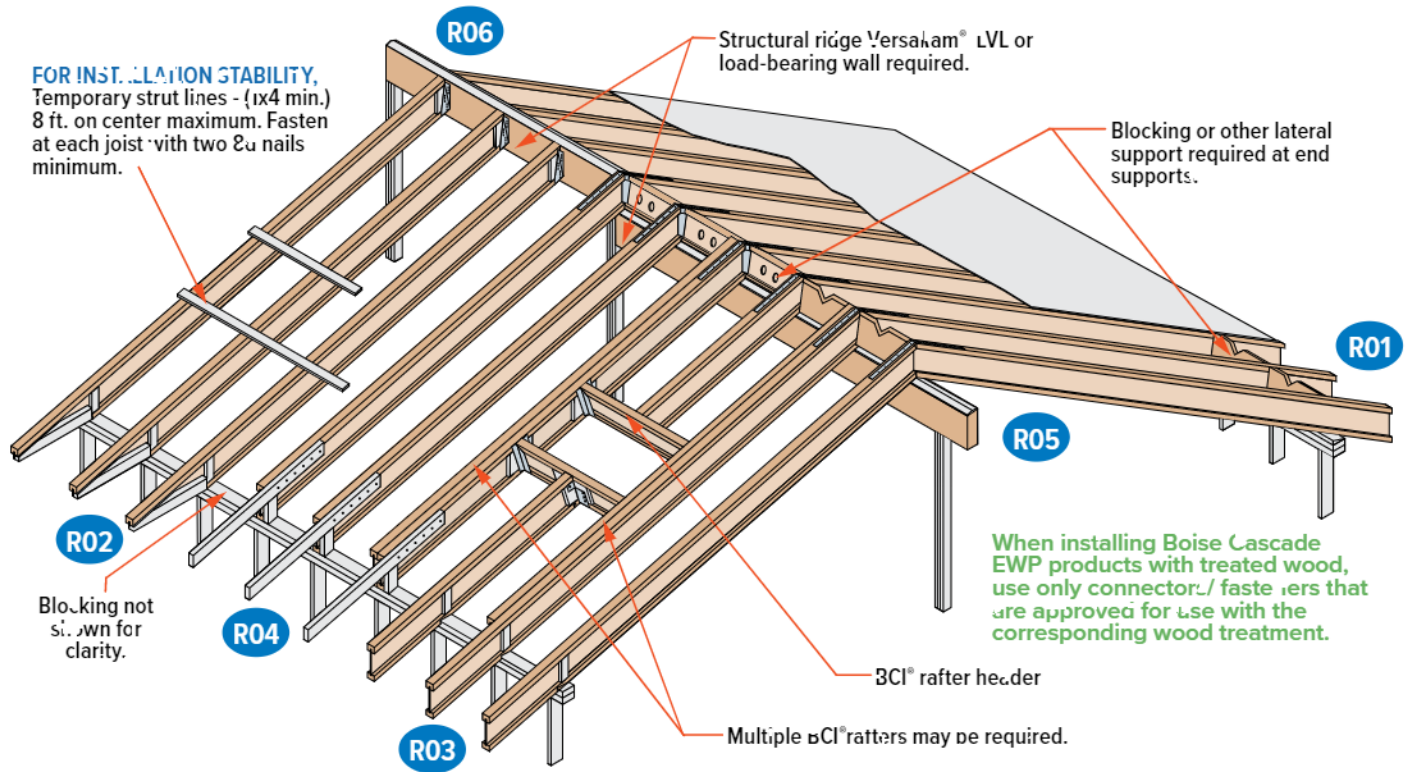
Allowable Uniform Floor Load (in pounds per lineal foot (PLF))

100% Load Duration

Span Length	BCI® 60s 2.0 Joist 2 ⁵ / ₁₆ " Flange Width						BCI® 90s 2.0 Joist 3 ¹ / ₂ " Flange Width					
	11 ⁷ / ₈ "		14"		16"		11 ⁷ / ₈ "		14"		16"	
	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load
6	-	366	-	366	-	366	-	450	-	453	-	456
7	-	314	-	314	-	314	-	385	-	388	-	391
8	-	275	-	275	-	275	-	337	-	340	-	342
9	-	244	-	244	-	244	-	300	-	302	-	304
10	-	220	-	220	-	220	-	270	-	272	-	274
11	-	200	-	200	-	200	-	245	-	247	-	249
12	-	183	-	183	-	183	-	225	-	226	-	228
13	-	169	-	169	-	169	-	207	-	209	-	210
14	155	157	-	157	-	157	-	192	-	194	-	195
15	128	146	-	146	-	146	-	180	-	181	-	182
16	107	137	-	137	-	137	152	168	-	170	-	171
17	90	129	-	129	-	129	129	158	-	160	-	161
18	77	122	110	122	-	122	110	150	-	151	-	152
19	66	115	95	115	-	115	95	142	134	143	-	144
20	57	110	82	110	109	110	83	135	117	136	-	137
21	50	100	72	104	95	104	72	128	102	129	-	130
22	43	87	63	100	84	100	63	122	90	123	119	124
23			55	95	74	95	56	112	79	118	105	119
24			49	91	65	91	49	99	70	113	94	114
25			43	87	58	88	44	88	63	108	83	109
26					52	84			56	104	75	105
27					47	81			50	100	67	101
28					42	78			45	91	61	97
29									41	82	55	94
30											50	91

- Total Load values are limited by shear, moment, or deflection equal to L/240.
- Live Load values are limited by deflection equal to L/480. For deflection limits of L/360 and L/960, multiply the Live Load values by 1.33 and 0.50 respectively.
- Both the Total Load and Live Load columns must be checked. Where a Live Load value is not shown, the Total Load value will control.
- Table values apply to either simple or multiple span joists. Span is measured center to center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values do not consider composite action from gluing and nailing floor sheathing (composite action is considered in floor span tables on page 4).
- Total Load values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- For assistance with floor design, consult the section *About Floor Performance* on page 4.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.

BCI® Rafters



SAFETY WARNING

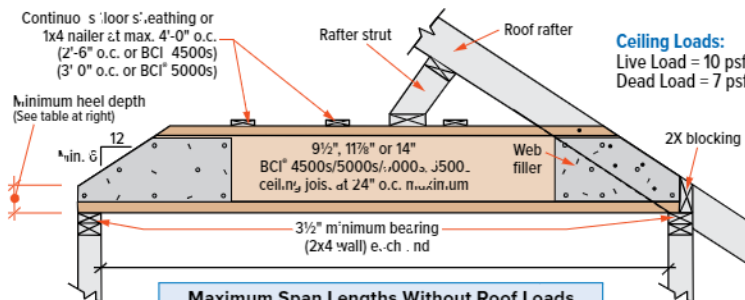
DO NOT ALLOW WORKERS ON BCI® JOISTS UNTIL ALL HANGERS, BCI® RIM JOISTS, RIM BOARDS, BCI® BLOCKING PANELS, X-BRACING AND TEMPORARY 1x4 STRUT LINES ARE INSTALLED AS SPECIFIED BELOW.

SERIOUS ACCIDENTS CAN RESULT FROM LACK OF ATTENTION TO PROPER BRACING DURING CONSTRUCTION. ACCIDENTS CAN BE AVOIDED UNDER NORMAL CONDITIONS BY FOLLOWING THE GUIDELINES BELOW.

- 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 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 1/2 inch 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.

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

BCI® joist shall not be used as collar/tension tie. Roof rafter shall be supported by ridge beam or other upper bearing support.



Maximum Span Lengths Without Roof Loads	
9 1/2" BCI® 4500s, 5000s, 6000s, 6500s	20'-0"
11 7/8" BCI® 4500s, 5000s, 6000s, 6500s	22'-0"
14" BCI® 4500s, 5000s, 6000s, 6500s	24'-6"

(if roof loads are present, see Notes 2 and 3 on right)

Minimum Heel Depths	Joist Depth	End Wall	
		2 x 4	2 x 6
9 1/2"	9 1/2"	2 1/2"	1 1/2"
11 7/8"	11 7/8"	3 1/2"	2 1/2"
14"	14"	4 1/2"	3 1/2"

Notes:

- 1) Detail is to be used only for ceiling joists with no access to attic space
- 2) Ceiling joist must be designed to carry all roof load transferred through rafter struts as shown
- 3) BCI® ceiling joist end reaction may not exceed 550 lbs.
- 4) Minimum roof slope is 6/12.
- 5) Nail roof rafter to BCI® top flange with one (1) 3" long box or larger nail.
- 6) 1x4 nailers must be continuous and nailed to a braced end wall
- 7) Install a web filler 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

Additional roof framing details available with BC Framers® software

R01

2x beveled plate for slope greater than 1/4/12

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

R02

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

2x4 blocking for soffit support

16" max. joist depth for birdsmouth cut

2'-6" max.

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

R03

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

Tight fit for lateral stability

16" max. joist depth for birdsmouth cut

2'-6" max.

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

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.

Versa-Lam LVL support beam.

BCI blocking; holes cut for ventilation

Double-beveled wood plate.

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

R06

Simpson or MiTek LSTA24 strap where slope exceeds 11/12. Strap shall be nailed for lower slopes in high-wind areas. Nailing per governing 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 10-10d nails.

Joist Hanger

Filler block. Nail with 10-10d nails.

Backer block: required wire tie top flange; joist hanger load exceeds 250 lb; install tight to top flange.

R11

Double joist may be required when L exceeds rafter spacing.

Blocking as required.

Nail outrigger through BCI web.

2" x outrigger notched around BCI top flange. Outrigger spacing no greater than 24" on-center.

2'-0" max.

End Wall

DN05

DO NOT bevel-cut joist beyond inside face of wall, except for specific conditions in detail F4 on p6 and on p13.

LATERAL SUPPORT

- BCI joists must be laterally supported at end supports (including supports adjacent to overhangs) with hangers, rim board, or blocking (Versa-Lam LVL, Boise Cascade Rimboard or 3C 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

- Minimum end bearing: 1 1/2" for all BCI joists. 3 1/2" 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:
 - Rim or closure panel: Two nails, one each into top and bottom flange. Up to 1 1/2" thick rim, use 8d x 2 1/2" nails; for 1 3/4" thick rim, use 10d box x 3" nails.
 - BCI 4500s/5000s rim joist: 2-10d box nails, one each in the top and bottom flange.
 - BCI 6000s/60s rim joist: 2-16d box nails, one each in the top and bottom flange.
 - BCI 6500s/90s rim joist: Toe-nail top flange to rim joist with 2 10d box nails, one each side of flange.
- BCI rim joist, rim board or BCI blocking panel to support:
 - Min. 8d nails @ 6" o.c. per IRC.
 - Connection per design professional of record's specification for shear transfer.
- BCI joist to support:
 - 2-8d nails, one on each side of the web, placed 1/2" minimum from the end of the BCI joist to limit splitting

WEB STIFFENER REQUIREMENTS

- Sheathing to BCI joist:
 - Pre-stamped residual nail foot sheathing nailing requires 8d common nails at 6" o.c. on edges and at 12" o.c. in the field (IRC Table R602.3(1)).
 - See closest allowable nail spacing limits on page 4 for floor diaphragm nailing specified at closer spacing than IRC.
 - For full lateral stability, maximum nail spacing for bracing is 18" for BCI 4500s and 5000s, and 24" for larger BCI joist series.
 - 14 gauge staples may be substituted for 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 FWP Engineering for further information.

BACKER AND FILLER BLOCK DIMENSIONS

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

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

MAXIMUM SLOPE

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

VENTILATION

- The 1 1/2" pre-stamped knock-out holes spaced at 12" o.c. along the BCI joist may all be knocked out and used for cross ventilation. Deeper joists than what is structurally needed may be advantageous in ventilation design. Consult local building official and/or ventilation specialist for specific ventilation 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. High end supports and intermediate supports may not be birdsmouth cut.

PROTECT BCI JOISTS FROM THE WEATHER

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

Maximum clear span in feet and inches, based on horizontal spans.

115% and 125% Load Duration																									
Condition			BCI® 4500s 1.8 Joist 1 3/4" Flange Width										BCI® 5000 1.8 Joist 2" Flange Width												
			9 1/2"			11 7/8"			14"				9 1/2"			11 7/8"			14"						
O.C. Spanning & Load Duration	Live Load (psf)	Dead Load (p.f)	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12					
12" o.c.	Non-Snow 125%	20	10	23'-10"	22'-6"	20'-10"	28'-5"	26'-9"	24'-10"	32'-3"	30'-5"	28'-3"	35'-9"	33'-8"	31'-3"	24'-1"	23'-5"	21'-9"	29'-1"	27'-11"	25'-11"	33'-8"	31'-9"	29'-5"	
		20	15	22'-1"	21'-3"	19'-7"	26'-11"	25'-3"	23'-4"	30'-7"	28'-9"	26'-6"	33'-6"	31'-10"	29'-4"	23'-6"	22'-1"	20'-5"	28'-0"	26'-4"	24'-4"	31'-10"	29'-11"	27'-7"	
		20	20	21'-7"	20'-2"	18'-7"	25'-8"	24'-0"	22'-1"	29'-2"	27'-4"	25'-1"	31'-4"	30'-3"	27'-10"	22'-5"	21'-0"	19'-4"	26'-9"	24'-0"	23'-0"	30'-3"	28'-5"	26'-2"	
	Snow 115%	25	10	22'-8"	21'-5"	19'-11"	26'-11"	25'-6"	23'-8"	30'-2"	29'-0"	26'-11"	32'-3"	31'-7"	29'-10"	23'-7"	22'-4"	20'-9"	28'-1"	26'-7"	24'-9"	31'-11"	31'-1"	29'-2"	27'-1"
		25	5	21'-7"	21'-5"	18'-10"	25'-7"	24'-2"	22'-5"	28'-2"	27'-5"	25'-6"	30'-1"	29'-4"	28'-3"	22'-6"	21'-2"	19'-1"	26'-10"	25'-3"	23'-4"	30'-3"	28'-8"	26'-1"	
		30	10	21'-8"	20'-6"	19'-1"	25'-9"	24'-5"	22'-9"	28'-3"	27'-9"	25'-11"	30'-2"	29'-8"	28'-8"	22'-7"	21'-4"	19'-11"	26'-10"	24'-5"	22'-9"	30'-4"	28'-11"	27'-0"	
		30	5	20'-3"	19'-7"	18'-2"	24'-1"	23'-4"	21'-8"	26'-7"	25'-11"	24'-7"	28'-5"	27'-9"	26'-10"	21'-7"	20'-5"	18'-11"	24'-9"	24'-4"	22'-7"	28'-6"	27'-8"	25'-8"	
		40	10	19'-8"	18'-11"	17'-10"	23'-2"	22'-6"	21'-3"	25'-3"	24'-11"	24'-2"	27'-0"	26'-8"	26'-11"	20'-6"	19'-8"	18'-1"	24'-1"	23'-5"	22'-2"	27'-2"	26'-8"	25'-2"	
		40	5	19'-5"	18'-4"	17'-1"	22'-1"	21'-8"	20'-4"	24'-1"	23'-7"	22'-11"	25'-8"	25'-2"	24'-6"	20'-2"	19'-1"	17'-10"	23'-8"	22'-9"	21'-3"	25'-10"	25'-4"	24'-1"	
		50	10	18'-3"	17'-6"	16'-7"	21'-2"	20'-10"	19'-9"	23'-1"	22'-10"	22'-5"	24'-8"	24'-4"	24'-0"	19'-0"	18'-1"	17'-3"	22'-8"	21'-3"	20'-7"	24'-10"	24'-6"	23'-5"	
		50	5	17'-11"	17'-4"	16'-3"	20'-4"	20'-0"	19'-4"	22'-2"	21'-9"	21'-3"	23'-8"	23'-3"	22'-9"	19'-0"	18'-11"	16'-11"	21'-10"	21'-5"	20'-2"	23'-9"	23'-4"	22'-10"	
		15" o.c.	Non-Snow 125%	20	10	21'-7"	20'-5"	18'-11"	25'-9"	24'-3"	22'-6"	29'-3"	27'-7"	25'-7"	31'-5"	30'-7"	27'-4"	22'-6"	21'-3"	19'-1"	26'-10"	25'-4"	23'-6"	30'-6"	28'-9"
20	15			20'-1"	19'-3"	17'-9"	24'-4"	22'-11"	21'-1"	27'-2"	26'-0"	24'-0"	29'-0"	28'-2"	26'-7"	21'-4"	20'-0"	18'-6"	25'-5"	23'-10"	22'-0"	28'-11"	27'-1"	25'-0"	
20	20			19'-6"	18'-3"	16'-10"	23'-3"	21'-9"	20'-0"	25'-4"	24'-5"	22'-9"	27'-1"	26'-2"	24'-11"	20'-4"	19'-0"	17'-6"	24'-3"	22'-6"	20'-10"	27'-2"	25'-10"	23'-9"	
Snow 115%	25		10	20'-6"	19'-5"	18'-1"	24'-0"	23'-1"	21'-6"	26'-1"	25'-7"	24'-5"	27'-11"	27'-4"	26'-7"	21'-4"	20'-2"	18'-10"	24'-1"	22'-5"	28'-1"	27'-4"	27'-4"	25'-6"	
	25		5	19'-7"	18'-5"	17'-1"	22'-4"	21'-9"	20'-4"	24'-4"	23'-9"	22'-11"	26'-0"	25'-4"	24'-3"	20'-3"	19'-2"	17'-9"	24'-0"	22'-10"	21'-2"	26'-2"	25'-6"	24'-1"	
	30		10	19'-7"	18'-7"	17'-4"	22'-5"	22'-0"	20'-7"	24'-3"	24'-0"	23'-5"	26'-1"	25'-8"	25'-11"	20'-3"	19'-4"	18'-1"	24'-1"	22'-1"	21'-6"	26'-3"	25'-9"	24'-5"	
	30		5	18'-7"	17'-9"	16'-6"	21'-1"	20'-7"	19'-7"	23'-0"	22'-5"	21'-9"	24'-7"	24'-0"	23'-3"	19'-7"	18'-6"	17'-2"	22'-8"	22'-0"	20'-5"	24'-8"	24'-1"	23'-3"	
	40		10	17'-8"	17'-1"	16'-2"	20'-1"	19'-9"	19'-3"	21'-1"	21'-7"	21'-1"	23'-4"	23'-0"	22'-7"	18'-7"	17'-10"	16'-10"	21'-7"	21'-3"	20'-1"	23'-6"	23'-2"	22'-8"	
	40		5	16'-10"	16'-6"	15'-6"	19'-1"	18'-8"	18'-2"	20'-10"	20'-5"	19'-10"	22'-3"	21'-10"	21'-3"	18'-1"	17'-4"	16'-1"	20'-6"	20'-1"	19'-3"	22'-4"	21'-11"	21'-4"	
	50		10	16'-2"	15'-10"	15'-0"	18'-4"	18'-1"	17'-9"	19'-11"	19'-9"	19'-1"	21'-4"	21'-1"	20'-9"	17'-2"	16'-6"	15'-8"	19'-8"	19'-5"	18'-8"	21'-3"	21'-2"	20'-10"	
	50		5	15'-6"	15'-3"	14'-8"	17'-7"	17'-3"	16'-10"	19'-2"	18'-10"	18'-5"	20'-5"	20'-1"	19'-8"	16'-8"	15'-4"	15'-4"	18'-10"	18'-6"	18'-1"	20'-7"	20'-2"	19'-9"	
	19 1/2" o.c.		Non-Snow 125%	20	10	20'-4"	19'-2"	17'-9"	24'-2"	22'-10"	21'-2"	26'-10"	25'-11"	24'-1"	28'-8"	28'-0"	26'-3"	21'-2"	19'-11"	18'-6"	25'-2"	23'-9"	22'-1"	28'-8"	27'-0"
20		15		19'-3"	18'-1"	16'-8"	22'-9"	21'-6"	19'-10"	24'-9"	24'-0"	22'-7"	26'-5"	25'-5"	24'-8"	20'-0"	18'-10"	17'-4"	23'-10"	22'-5"	20'-8"	26'-7"	25'-6"	23'-6"	
20		20		18'-4"	17'-2"	15'-9"	21'-2"	20'-5"	18'-9"	23'-1"	22'-4"	21'-3"	24'-1"	23'-10"	22'-9"	19'-1"	17'-10"	16'-5"	22'-9"	21'-4"	19'-7"	24'-10"	23'-11"	22'-3"	
Snow 115%		25	10	19'-3"	18'-3"	17'-0"	21'-10"	21'-5"	20'-2"	23'-10"	23'-4"	22'-8"	25'-6"	24'-11"	24'-3"	20'-1"	19'-0"	17'-8"	23'-6"	22'-7"	21'-1"	25'-7"	25'-1"	23'-11"	
		25	5	18'-0"	17'-4"	16'-0"	20'-5"	19'-10"	19'-1"	22'-3"	21'-8"	20'-10"	23'-9"	23'-1"	22'-4"	19'-2"	18'-0"	16'-8"	21'-11"	21'-4"	19'-11"	23'-10"	22'-3"	22'-5"	
		30	10	18'-3"	17'-5"	16'-3"	20'-5"	20'-1"	19'-5"	22'-3"	21'-11"	21'-4"	23'-10"	23'-5"	22'-10"	19'-2"	18'-2"	16'-11"	22'-0"	21'-7"	20'-2"	23'-11"	23'-6"	22'-11"	
		30	5	16'-11"	16'-7"	15'-6"	19'-3"	18'-9"	18'-2"	20'-11"	20'-5"	19'-10"	22'-3"	21'-10"	21'-2"	18'-3"	17'-4"	16'-1"	20'-8"	20'-2"	19'-2"	22'-6"	22'-0"	21'-3"	
		40	10	16'-2"	15'-11"	15'-2"	18'-3"	18'-0"	17'-8"	19'-11"	19'-8"	19'-3"	21'-4"	21'-0"	20'-7"	17'-4"	16'-9"	15'-10"	19'-8"	19'-4"	18'-10"	21'-3"	21'-1"	20'-8"	
		40	5	15'-4"	15'-0"	14'-6"	17'-5"	17'-1"	16'-7"	18'-11"	18'-7"	18'-1"	20'-1"	19'-10"	19'-4"	16'-6"	16'-2"	15'-2"	18'-8"	18'-4"	17'-10"	20'-4"	20'-0"	19'-5"	
		50	10	14'-9"	14'-6"	14'-1"	16'-8"	16'-6"	16'-2"	18'-2"	18'-0"	17'-8"	19'-5"	19'-1"	18'-11"	15'-10"	15'-6"	14'-8"	17'-11"	17'-9"	17'-5"	19'-7"	19'-4"	19'-0"	
		50	5	14'-1"	13'-10"	13'-7"	16'-0"	15'-9"	15'-4"	17'-5"	17'-2"	16'-9"	18'-8"	18'-4"	17'-11"	15'-2"	14'-11"	14'-4"	17'-2"	16'-11"	16'-6"	18'-9"	18'-5"	18'-0"	
		24" o.c.	Non-Snow 125%	20	10	18'-10"	17'-9"	16'-6"	22'-0"	21'-1"	19'-7"	24'-0"	23'-5"	22'-4"	25'-7"	25'-0"	24'-3"	19'-7"	18'-6"	17'-2"	23'-4"	22'-0"	20'-5"	25'-9"	25'-0"
20	15			17'-10"	16'-9"	15'-5"	20'-3"	19'-8"	18'-4"	22'-1"	21'-5"	20'-7"	23'-8"	22'-11"	22'-0"	18'-6"	17'-5"	16'-1"	21'-10"	20'-9"	19'-2"	23'-9"	23'-1"	21'-9"	
20	20			16'-8"	15'-11"	14'-7"	19'-11"	18'-3"	17'-5"	20'-5"	19'-11"	19'-0"	22'-1"	21'-3"	20'-4"	17'-8"	16'-7"	15'-3"	20'-4"	19'-8"	18'-2"	22'-2"	21'-5"	20'-5"	
Snow 115%	25		10	17'-3"	16'-10"	15'-9"	19'-6"	19'-2"	18'-7"	21'-3"	20'-10"	20'-3"	22'-9"	22'-3"	21'-8"	18'-6"	17'-7"	16'-4"	21'-0"	20'-7"	19'-6"	22'-10"	22'-5"	21'-9"	
	25		5	16'-1"	15'-7"	14'-10"	18'-2"	17'-9"	17'-1"	19'-10"	19'-4"	18'-8"	21'-3"	20'-8"	19'-11"	17'-3"	16'-8"	15'-5"	19'-7"	19'-1"	18'-4"	21'-4"	20'-9"	20'-0"	
	30		10	16'-1"	15'-10"	15'-1"	18'-3"	17'-11"	17'-6"	19'-11"	19'-7"	19'-1"	21'-3"	20'-11"	20'-5"	17'-4"	16'-10"	15'-8"	19'-7"	19'-3"	18'-9"	21'-5"	21'-0"	20'-6"	
	30		5	15'-2"	14'-9"	14'-4"	17'-2"	16'-9"	16'-3"	18'-9"	18'-3"	17'-8"	20'-0"	19'-6"	18'-11"	16'-3"	15'-11"	14'-11"	18'-5"	18'-0"	17'-5"	20'-1"	19'-8"	19'-0"	
	40		10	14'-5"	14'-2"	13'-11"	16'-4"	16'-1"	15'-9"	17'-10"	17'-7"	17'-2"	19'-0"	18'-9"	18'-5"	15'-6"	15'-3"	14'-7"	17'-7"	17'-4"	16'-11"	19'-2"	18'-10"	18'-6"	
	40		5	13'-8"	13'-5"	13'-1"	15'-6"	15'-3"	14'-10"	16'-11"	16'-7"	16'-2"	18'-1"	17'-9"	17'-3"	14'-3"	14'-5"	14'-0"	16'-8"	16'-4"	15'-11"	18'-2"	17'-10"	17'-4"	
	50		10	13'-2"	13'-0"	12'-9"	14'-11"	14'-9"	14'-6"	16'-3"	16'-1"	15'-9"	17'-4"	17'-2"	16'-10"	14'-2"	13'-11"	13'-7"	16'-0"	15'-10"	15'-7"	17'-5"	17'-2"	16'-7"	
	50		5	12'-7"	12'-4"	12'-1"	14'-3"	14'-0"	13'-9"	15'-7"	15'-4"	14'-11"	16'-6"	16'-0"	15'-3"	13'-6"	13'-4"	13'-0"	15'-4"	14'-11"	14'-3"	16'-2"	15'-8"	14'-11"	

- Table values are limited by shear, moment, total load deflection equal to L/180 and live load deflection equal to L/240. Check the local building code for other deflection limit that may apply.
- Table values represent the most restrictive of simple or multiple span applications. Analyze multiple span joists with the EC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BCalc® software.
- Slope roof joists at least 1/4" over 1" to minimize ponding
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code

Maximum clear span in feet and inches, based on horizontal spans.

115% and 125% Load Duration

Condition			BCI® 6000 1.8 Joist 2 ⁵ / ₁₆ " Flange Width												
			9 ¹ / ₂ "			11 ⁷ / ₈ "			14"			16"			
O.C. Spacing & Load Duration	Live Load (psf)	Dead Load (psf)	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	
12" o.c.	Non-Snow 125%	20	10	26'-0"	24'-6"	22'-9"	30'-11"	29'-2"	27'-0"	35'-2"	33'-2"	30'-9"	38'-10"	36'-7"	34'-0"
		20	15	24'-7"	23'-1"	21'-4"	29'-3"	27'-6"	25'-4"	33'-3"	31'-3"	28'-10"	36'-9"	34'-6"	31'-10"
		20	20	23'-6"	22'-0"	20'-2"	27'-11"	26'-1"	24'-0"	31'-9"	29'-9"	27'-4"	35'-1"	32'-10"	30'-2"
	Snow 115%	25	10	24'-8"	23'-4"	21'-8"	29'-4"	27'-9"	25'-10"	33'-4"	31'-6"	29'-4"	36'-10"	34'-10"	32'-5"
		25	15	23'-6"	22'-2"	20'-6"	28'-0"	26'-4"	24'-5"	31'-10"	29'-11"	27'-9"	34'-11"	33'-1"	30'-8"
		30	10	23'-7"	22'-4"	20'-10"	28'-0"	26'-7"	24'-9"	31'-11"	30'-2"	28'-2"	35'-1"	33'-5"	31'-2"
		30	15	22'-7"	21'-4"	19'-9"	26'-11"	25'-4"	23'-6"	30'-7"	28'-10"	26'-9"	33'-0"	31'-11"	29'-7"
		40	10	21'-5"	20'-7"	19'-5"	25'-6"	24'-6"	23'-1"	29'-0"	27'-10"	26'-3"	31'-4"	30'-9"	29'-0"
		40	15	21'-1"	20'-0"	18'-7"	25'-1"	23'-9"	22'-2"	27'-11"	27'-1"	25'-2"	29'-10"	29'-3"	27'-10"
		50	10	19'-10"	19'-1"	18'-1"	23'-7"	22'-8"	21'-6"	26'-9"	25'-9"	24'-6"	28'-8"	28'-3"	27'-1"
		50	15	19'-10"	18'-11"	17'-8"	23'-7"	22'-6"	21'-0"	25'-8"	25'-3"	23'-11"	27'-5"	27'-0"	26'-5"
		16" o.c.	Non-Snow 125%	20	10	23'-6"	22'-2"	20'-7"	28'-0"	26'-5"	24'-6"	31'-10"	30'-0"	27'-10"	35'-2"
20	15			22'-3"	20'-11"	19'-4"	26'-6"	24'-11"	23'-0"	30'-2"	28'-4"	26'-2"	33'-4"	31'-4"	28'-11"
20	20			21'-3"	19'-11"	18'-4"	25'-3"	23'-8"	21'-9"	28'-9"	26'-11"	24'-9"	31'-5"	29'-9"	27'-5"
Snow 115%	25		10	22'-4"	21'-1"	19'-8"	26'-7"	25'-1"	23'-5"	30'-3"	28'-7"	26'-7"	32'-5"	31'-7"	29'-5"
	25		15	21'-4"	20'-1"	18'-7"	25'-4"	23'-10"	22'-1"	28'-3"	27'-2"	25'-2"	30'-3"	29'-5"	27'-9"
	30		10	21'-4"	20'-3"	18'-10"	25'-5"	24'-1"	22'-5"	28'-4"	27'-4"	25'-6"	30'-4"	29'-9"	28'-3"
	30		15	20'-6"	19'-4"	17'-11"	24'-4"	23'-0"	21'-4"	26'-8"	26'-0"	24'-3"	28'-6"	27'-10"	26'-10"
	40		10	19'-5"	18'-7"	17'-7"	23'-1"	22'-2"	20'-11"	25'-5"	25'-0"	23'-10"	27'-2"	26'-9"	26'-2"
	40		15	19'-1"	18'-1"	16'-10"	22'-2"	21'-6"	20'-1"	24'-2"	23'-8"	22'-10"	25'-10"	25'-4"	24'-8"
	50		10	18'-0"	17'-3"	16'-4"	21'-3"	20'-6"	19'-6"	23'-2"	22'-11"	22'-2"	24'-9"	24'-6"	24'-1"
	50		15	17'-11"	17'-1"	16'-0"	20'-4"	20'-0"	19'-0"	22'-2"	21'-10"	21'-4"	23'-9"	23'-4"	22'-10"
	19.2" o.c.		Non-Snow 125%	20	10	22'-1"	20'-10"	19'-4"	26'-3"	24'-10"	23'-0"	29'-11"	28'-3"	26'-2"	33'-1"
20		15		20'-11"	19'-8"	18'-2"	24'-11"	23'-5"	21'-7"	28'-4"	26'-7"	24'-7"	30'-8"	29'-5"	27'-2"
20		20		19'-11"	18'-8"	17'-2"	23'-9"	22'-3"	20'-5"	26'-10"	25'-4"	23'-3"	28'-8"	27'-8"	25'-9"
Snow 115%		25	10	21'-0"	19'-10"	18'-6"	24'-11"	23'-7"	22'-0"	27'-8"	26'-10"	25'-0"	29'-7"	28'-11"	27'-8"
		25	15	20'-0"	18'-10"	17'-5"	23'-8"	22'-5"	20'-9"	25'-9"	25'-1"	23'-7"	27'-7"	26'-10"	25'-11"
		30	10	20'-1"	19'-0"	17'-9"	23'-9"	22'-7"	21'-1"	25'-10"	25'-5"	24'-0"	27'-8"	27'-2"	26'-6"
		30	15	19'-3"	18'-2"	16'-10"	22'-4"	21'-7"	20'-0"	24'-4"	23'-9"	22'-10"	26'-0"	25'-5"	24'-7"
		40	10	18'-3"	17'-6"	16'-6"	21'-3"	20'-10"	19'-8"	23'-2"	22'-10"	22'-4"	24'-9"	24'-5"	23'-11"
		40	15	17'-10"	17'-0"	15'-10"	20'-2"	19'-10"	18'-10"	22'-0"	21'-7"	21'-0"	23'-6"	23'-1"	22'-6"
		50	10	16'-10"	16'-2"	15'-4"	19'-5"	19'-2"	18'-3"	21'-1"	20'-10"	20'-6"	22'-7"	22'-4"	21'-11"
		50	15	16'-4"	16'-1"	15'-0"	18'-7"	18'-3"	17'-10"	20'-3"	19'-11"	19'-5"	21'-8"	21'-3"	20'-10"
		24" o.c.	Non-Snow 125%	20	10	20'-6"	19'-4"	17'-11"	24'-4"	23'-0"	21'-4"	27'-9"	26'-2"	24'-3"	29'-9"
20	15			19'-4"	18'-2"	16'-10"	23'-0"	21'-8"	20'-0"	25'-8"	24'-8"	22'-9"	27'-5"	26'-7"	25'-2"
20	20			18'-6"	17'-3"	15'-11"	22'-0"	20'-7"	18'-11"	23'-11"	23'-1"	21'-7"	25'-7"	24'-9"	23'-7"
Snow 115%	25		10	19'-5"	18'-4"	17'-1"	22'-8"	21'-10"	20'-4"	24'-8"	24'-2"	23'-2"	26'-5"	25'-10"	25'-2"
	25		15	18'-6"	17'-5"	16'-2"	21'-2"	20'-7"	19'-3"	23'-0"	22'-5"	21'-8"	24'-8"	24'-0"	23'-2"
	30		10	18'-7"	17'-7"	16'-5"	21'-2"	20'-10"	19'-6"	23'-1"	22'-8"	22'-2"	24'-9"	24'-3"	23'-8"
	30		15	17'-7"	16'-9"	15'-7"	19'-11"	19'-6"	18'-7"	21'-9"	21'-3"	20'-6"	23'-3"	22'-8"	21'-11"
	40		10	16'-9"	16'-2"	15'-3"	19'-0"	18'-8"	18'-2"	20'-8"	20'-4"	20'-0"	22'-1"	21'-9"	21'-4"
	40		15	15'-11"	15'-7"	14'-8"	18'-0"	17'-8"	17'-2"	19'-8"	19'-3"	18'-9"	21'-0"	20'-7"	19'-8"
	50		10	15'-3"	14'-11"	14'-3"	17'-4"	17'-1"	16'-10"	18'-10"	18'-8"	18'-4"	19'-10"	19'-5"	18'-9"
	50		15	14'-7"	14'-4"	13'-11"	16'-7"	16'-4"	15'-11"	17'-11"	17'-4"	16'-6"	18'-3"	17'-8"	16'-10"

- Table values are limited by shear, moment, total load deflection equal to L/180 and live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Table values represent the most restrictive of simple or multiple span applications. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of the tables by analyzing a specific application with the BC Calc® software.
- Slope roof joists at least ¼" over 12" to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Maximum clear span in feet and inches, based on horizontal spans.

Condition			BCI® 6500 1.8 Joist 2 ⁹ / ₁₆ " Flange Width														
			9 ¹ / ₂ "			11 ⁷ / ₈ "			14"			16"					
O.C. Spacing & Load Duration	Live Load (psf)	Dead Load (psf)	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12			
12" o.c.	Non-Snow 125%	20	10	26'-10"	25'-3"	23'-6"	31'-10"	30'-0"	27'-10"	36'-2"	34'-1"	31'-8"	40'-0"	37'-8"	35'-0"		
		20	15	25'-5"	23'-10"	22'-0"	30'-2"	28'-4"	26'-1"	34'-3"	32'-2"	29'-8"	37'-10"	35'-7"	32'-10"		
		20	20	24'-3"	22'-8"	20'-10"	28'-9"	26'-11"	24'-9"	32'-8"	30'-7"	28'-2"	36'-1"	33'-10"	31'-1"		
	Snow 115%	25	10	25'-5"	24'-1"	22'-5"	30'-3"	28'-7"	26'-7"	34'-4"	32'-6"	30'-3"	37'-11"	35'-10"	33'-5"		
		25	15	24'-3"	22'-10"	21'-2"	28'-10"	27'-2"	25'-1"	32'-9"	30'-10"	28'-7"	36'-2"	34'-1"	31'-7"		
		30	10	24'-4"	23'-0"	21'-6"	28'-11"	27'-4"	25'-6"	32'-10"	31'-1"	29'-0"	36'-3"	34'-4"	32'-1"		
		30	15	23'-4"	22'-0"	20'-5"	27'-8"	26'-2"	24'-3"	31'-6"	29'-9"	27'-7"	34'-8"	32'-10"	30'-6"		
		40	10	22'-2"	21'-3"	20'-0"	26'-4"	25'-3"	23'-10"	29'-11"	28'-8"	27'-1"	33'-0"	31'-8"	29'-11"		
		40	15	21'-9"	20'-7"	19'-3"	25'-11"	24'-6"	22'-10"	29'-5"	27'-10"	25'-11"	31'-5"	30'-9"	28'-8"		
		50	10	20'-6"	19'-8"	18'-8"	24'-4"	23'-4"	22'-2"	27'-8"	26'-7"	25'-2"	30'-2"	29'-4"	27'-10"		
		50	15	20'-6"	19'-6"	18'-3"	24'-4"	23'-2"	21'-8"	27'-0"	26'-4"	24'-8"	28'-11"	28'-5"	27'-3"		
		16" o.c.	Non-Snow 125%	20	10	24'-4"	22'-11"	21'-3"	28'-10"	27'-2"	25'-3"	32'-10"	30'-11"	28'-8"	36'-3"	34'-2"	31'-9"
				20	15	23'-0"	21'-7"	19'-11"	27'-4"	25'-8"	23'-8"	31'-1"	29'-2"	26'-11"	34'-4"	32'-3"	29'-9"
				20	20	21'-11"	20'-6"	18'-11"	26'-1"	24'-5"	22'-5"	29'-8"	27'-9"	25'-6"	32'-9"	30'-8"	28'-2"
Snow 115%	25		10	23'-1"	21'-10"	20'-4"	27'-5"	25'-11"	24'-1"	31'-2"	29'-5"	27'-5"	34'-1"	32'-6"	30'-3"		
	25		15	22'-0"	20'-8"	19'-2"	26'-1"	24'-7"	22'-9"	29'-8"	27'-11"	25'-11"	31'-10"	30'-11"	28'-7"		
	30		10	22'-0"	20'-10"	19'-6"	26'-2"	24'-9"	23'-1"	29'-9"	28'-2"	26'-4"	31'-11"	31'-2"	29'-1"		
	30		15	21'-1"	19'-11"	18'-6"	25'-1"	23'-8"	22'-0"	28'-1"	26'-11"	25'-0"	30'-0"	29'-4"	27'-7"		
	40		10	20'-0"	19'-3"	18'-2"	23'-10"	22'-10"	21'-7"	26'-9"	26'-0"	24'-6"	28'-7"	28'-2"	27'-1"		
	40		15	19'-9"	18'-8"	17'-5"	23'-4"	22'-2"	20'-8"	25'-5"	24'-11"	23'-6"	27'-2"	26'-8"	25'-11"		
	50		10	18'-6"	17'-9"	16'-11"	22'-1"	21'-2"	20'-1"	24'-5"	24'-1"	22'-10"	26'-1"	25'-9"	25'-3"		
	50		15	18'-6"	17'-8"	16'-6"	21'-5"	21'-0"	19'-8"	23'-5"	23'-0"	22'-4"	25'-0"	24'-7"	24'-0"		
	19.2" o.c.		Non-Snow 125%	20	10	22'-10"	21'-6"	20'-0"	27'-1"	25'-7"	23'-9"	30'-10"	29'-1"	27'-0"	34'-0"	32'-1"	29'-10"
				20	15	21'-7"	20'-3"	18'-9"	25'-8"	24'-1"	22'-3"	29'-2"	27'-5"	25'-4"	32'-3"	30'-3"	27'-11"
				20	20	20'-7"	19'-3"	17'-9"	24'-6"	22'-11"	21'-1"	27'-10"	26'-1"	24'-0"	30'-2"	28'-9"	26'-6"
Snow 115%		25	10	21'-8"	20'-6"	19'-1"	25'-9"	24'-4"	22'-8"	29'-1"	27'-8"	25'-9"	31'-1"	30'-6"	28'-5"		
		25	15	20'-8"	19'-5"	18'-0"	24'-6"	23'-1"	21'-5"	27'-2"	26'-3"	24'-4"	29'-0"	28'-3"	26'-11"		
		30	10	20'-8"	19'-7"	18'-3"	24'-7"	23'-3"	21'-9"	27'-3"	26'-6"	24'-8"	29'-1"	28'-7"	27'-4"		
		30	15	19'-10"	18'-9"	17'-5"	23'-6"	22'-3"	20'-8"	25'-7"	25'-0"	23'-6"	27'-5"	26'-9"	25'-11"		
		40	10	18'-10"	18'-1"	17'-1"	22'-4"	21'-5"	20'-3"	24'-4"	24'-0"	23'-0"	26'-1"	25'-8"	25'-2"		
		40	15	18'-6"	17'-6"	16'-4"	21'-3"	20'-10"	19'-5"	23'-2"	22'-9"	22'-1"	24'-9"	24'-4"	23'-8"		
		50	10	17'-5"	16'-8"	15'-10"	20'-5"	19'-10"	18'-10"	22'-3"	22'-0"	21'-5"	23'-9"	23'-6"	23'-1"		
		50	15	17'-3"	16'-7"	15'-6"	19'-7"	19'-3"	18'-5"	21'-4"	21'-0"	20'-6"	22'-10"	22'-2"	21'-2"		
		24" o.c.	Non-Snow 125%	20	10	21'-1"	19'-11"	18'-6"	25'-1"	23'-8"	22'-0"	28'-6"	26'-11"	25'-0"	31'-4"	29'-9"	27'-7"
				20	15	20'-0"	18'-9"	17'-4"	23'-9"	22'-4"	20'-7"	27'-0"	25'-5"	23'-5"	28'-11"	28'-0"	25'-11"
				20	20	19'-1"	17'-10"	16'-5"	22'-8"	21'-3"	19'-6"	25'-3"	24'-2"	22'-2"	26'-11"	26'-0"	24'-6"
Snow 115%	25		10	20'-0"	18'-11"	17'-8"	23'-10"	22'-6"	21'-0"	26'-0"	25'-6"	23'-10"	27'-10"	27'-3"	26'-4"		
	25		15	19'-1"	18'-0"	16'-8"	22'-3"	21'-5"	19'-10"	24'-3"	23'-7"	22'-6"	25'-11"	25'-3"	24'-4"		
	30		10	19'-2"	18'-2"	16'-11"	22'-4"	21'-7"	20'-1"	24'-4"	23'-11"	22'-11"	26'-0"	25'-7"	24'-11"		
	30		15	18'-4"	17'-4"	16'-1"	21'-0"	20'-6"	19'-1"	22'-10"	22'-4"	21'-7"	24'-5"	23'-11"	23'-1"		
	40		10	17'-5"	16'-8"	15'-9"	20'-0"	19'-8"	18'-9"	21'-9"	21'-5"	21'-0"	23'-3"	22'-11"	22'-3"		
	40		15	16'-9"	16'-2"	15'-1"	19'-0"	18'-7"	18'-0"	20'-8"	20'-4"	19'-3"	21'-7"	20'-9"	19'-8"		
	50		10	16'-1"	15'-5"	14'-8"	18'-3"	18'-0"	17'-5"	19'-6"	19'-0"	18'-5"	19'-10"	19'-5"	18'-9"		
	50		15	15'-5"	15'-2"	14'-4"	17'-3"	16'-8"	15'-11"	17'-11"	17'-4"	16'-6"	18'-3"	17'-8"	16'-10"		

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- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of the tables by analyzing a specific application with the BC Calc® software.
- Slope roof joists at least ¼" over 12" to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Maximum clear span in feet and inches, based on horizontal spans.

115% and 125% Load Duration

Condition			BCI® 60s 2.0 Joist 2 ⁵ / ₁₆ " Flange Width									BCI® 90s 2.0 Joist 3 ¹ / ₂ " Flange Width									
			11 ⁷ / ₈ "			14"			16"			11 ⁷ / ₈ "			14"			16"			
O.C. Spacing & Load Duration	Live Load (psf)	Dead Load (psf)	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12	
12" o.c.	Non-Snow 125%	20	10	34'-1"	32'-2"	29'-10"	38'-9"	36'-7"	33'-11"	42'-11"	40'-6"	37'-7"	39'-0"	36'-10"	34'-2"	44'-3"	41'-9"	38'-9"	49'-0"	46'-3"	42'-11"
		20	15	32'-4"	30'-4"	28'-0"	36'-9"	34'-6"	31'-10"	40'-8"	38'-3"	35'-3"	37'-0"	34'-9"	32'-1"	41'-11"	39'-4"	36'-4"	46'-5"	43'-7"	40'-3"
		20	20	30'-10"	28'-10"	26'-6"	35'-1"	32'-10"	30'-2"	38'-10"	36'-4"	33'-5"	35'-3"	33'-0"	30'-4"	39'-11"	37'-5"	34'-5"	44'-3"	41'-5"	38'-1"
	Snow 115%	25	10	32'-5"	30'-7"	28'-6"	36'-10"	34'-10"	32'-5"	40'-10"	38'-7"	35'-11"	37'-1"	35'-0"	32'-7"	42'-0"	39'-8"	36'-11"	46'-6"	44'-0"	40'-11"
		25	15	30'-11"	29'-1"	26'-11"	35'-2"	33'-1"	30'-7"	38'-11"	36'-8"	33'-11"	35'-4"	33'-3"	30'-10"	40'-1"	37'-9"	34'-11"	44'-4"	41'-9"	38'-8"
		0	10	31'-0"	29'-4"	27'-4"	35'-3"	33'-4"	31'-1"	39'-0"	36'-11"	34'-5"	35'-5"	33'-7"	31'-4"	40'-2"	38'-0"	35'-6"	44'-6"	42'-1"	39'-4"
		0	15	29'-8"	28'-0"	26'-0"	33'-9"	31'-10"	29'-7"	37'-5"	35'-3"	32'-9"	34'-0"	32'-1"	29'-9"	38'-6"	36'-4"	33'-9"	42'-8"	40'-3"	37'-4"
		40	10	28'-2"	27'-0"	25'-6"	32'-1"	30'-9"	29'-0"	35'-6"	34'-1"	32'-2"	32'-3"	30'-11"	29'-2"	36'-6"	35'-0"	33'-1"	40'-6"	38'-10"	36'-8"
		40	15	27'-9"	26'-3"	24'-6"	31'-7"	29'-10"	27'-10"	34'-11"	33'-1"	30'-10"	31'-9"	30'-0"	28'-0"	36'-0"	34'-0"	31'-9"	39'-10"	37'-9"	35'-2"
		50	10	26'-1"	25'-0"	23'-9"	29'-8"	28'-6"	27'-0"	32'-11"	31'-6"	29'-11"	29'-10"	28'-8"	27'-2"	33'-10"	32'-5"	30'-10"	37'-6"	35'-11"	34'-2"
		50	15	26'-1"	24'-10"	23'-3"	29'-8"	28'-3"	26'-5"	32'-11"	31'-4"	29'-3"	29'-10"	28'-5"	26'-7"	33'-10"	32'-3"	30'-1"	37'-6"	35'-8"	33'-5"
		1.0" o.c.	Non-Snow 125%	20	10	30'-11"	29'-2"	27'-1"	35'-2"	33'-2"	30'-9"	38'-11"	36'-9"	34'-1"	35'-4"	33'-4"	31'-0"	40'-1"	37'-10"	35'-1"	44'-5"
20	15			29'-3"	27'-6"	25'-5"	33'-4"	31'-3"	28'-10"	36'-11"	34'-8"	32'-0"	33'-6"	31'-6"	29'-1"	37'-11"	35'-8"	32'-11"	42'-0"	39'-6"	36'-6"
20	20			27'-11"	26'-2"	24'-1"	31'-9"	29'-9"	27'-4"	35'-2"	32'-11"	30'-4"	31'-11"	29'-11"	27'-6"	36'-2"	33'-11"	31'-2"	40'-1"	37'-7"	34'-7"
Snow 115%	25		10	29'-4"	27'-9"	25'-10"	33'-5"	31'-7"	29'-5"	37'-0"	34'-11"	32'-7"	33'-7"	31'-9"	29'-7"	38'-1"	36'-0"	33'-6"	42'-2"	39'-10"	37'-1"
	25		15	28'-0"	26'-4"	24'-5"	31'-10"	30'-0"	27'-9"	35'-3"	33'-2"	30'-9"	32'-0"	30'-2"	27'-11"	36'-3"	34'-2"	31'-8"	40'-2"	37'-10"	35'-1"
	30		10	28'-1"	26'-7"	24'-10"	31'-11"	30'-3"	28'-2"	35'-4"	33'-6"	31'-3"	32'-1"	30'-5"	28'-4"	36'-4"	34'-5"	32'-2"	40'-3"	38'-2"	35'-8"
	30		15	26'-11"	25'-5"	23'-7"	30'-7"	28'-10"	26'-10"	33'-11"	32'-0"	29'-8"	30'-9"	29'-0"	27'-0"	34'-10"	32'-11"	30'-7"	38'-7"	36'-5"	33'-10"
	40		10	25'-6"	24'-6"	23'-1"	29'-0"	27'-10"	26'-4"	32'-2"	30'-10"	29'-2"	29'-2"	28'-0"	26'-5"	33'-1"	31'-9"	30'-0"	36'-8"	35'-2"	33'-3"
	40		15	25'-1"	23'-9"	22'-2"	28'-7"	27'-1"	25'-3"	31'-8"	30'-0"	27'-11"	28'-9"	27'-2"	25'-4"	32'-7"	30'-10"	28'-9"	36'-1"	34'-2"	31'-10"
	50		10	23'-7"	22'-8"	21'-6"	26'-10"	25'-9"	24'-6"	29'-9"	28'-7"	27'-1"	27'-0"	25'-11"	24'-7"	30'-7"	29'-5"	27'-11"	33'-11"	32'-7"	30'-11"
	50		15	23'-7"	22'-6"	21'-0"	26'-10"	25'-7"	23'-11"	28'-7"	27'-8"	26'-5"	27'-0"	25'-9"	24'-1"	30'-7"	29'-2"	27'-3"	33'-11"	32'-4"	30'-3"
	19.2" o.c.		Non-Snow 125%	20	10	29'-1"	27'-5"	25'-5"	33'-0"	31'-2"	28'-11"	36'-7"	34'-6"	32'-0"	33'-3"	31'-4"	29'-1"	37'-8"	35'-6"	33'-0"	41'-8"
20		15		27'-6"	25'-10"	23'-10"	31'-3"	29'-5"	27'-1"	34'-8"	32'-7"	30'-1"	31'-5"	29'-7"	27'-3"	35'-8"	33'-6"	30'-11"	39'-6"	37'-1"	34'-3"
20		20		26'-3"	24'-7"	22'-7"	29'-10"	27'-11"	25'-8"	33'-0"	30'-11"	28'-6"	30'-0"	28'-1"	25'-10"	34'-0"	31'-10"	29'-3"	37'-8"	35'-3"	32'-5"
Snow 115%		25	10	27'-7"	26'-1"	24'-3"	31'-4"	29'-8"	27'-7"	34'-9"	32'-10"	30'-7"	31'-6"	29'-10"	27'-9"	35'-9"	33'-10"	31'-6"	39'-7"	37'-5"	34'-11"
		25	15	26'-3"	24'-9"	22'-11"	29'-11"	28'-2"	26'-1"	33'-1"	31'-2"	28'-11"	30'-1"	28'-4"	26'-3"	34'-1"	32'-1"	29'-9"	37'-9"	35'-7"	32'-11"
		30	10	26'-4"	25'-0"	23'-4"	30'-0"	28'-5"	26'-6"	33'-2"	31'-5"	29'-4"	30'-1"	28'-7"	26'-8"	34'-2"	32'-4"	30'-2"	37'-10"	35'-10"	33'-6"
		30	15	25'-3"	23'-10"	22'-2"	28'-9"	27'-1"	25'-2"	31'-10"	30'-0"	27'-11"	28'-10"	27'-3"	25'-4"	32'-9"	30'-11"	28'-8"	36'-3"	34'-3"	31'-10"
		40	10	24'-0"	23'-0"	21'-9"	27'-3"	26'-2"	24'-8"	30'-2"	29'-0"	27'-4"	27'-5"	26'-3"	24'-10"	31'-0"	29'-10"	28'-2"	34'-5"	33'-0"	31'-2"
		40	15	23'-7"	22'-4"	20'-10"	26'-10"	25'-5"	23'-8"	28'-1"	27'-0"	25'-7"	26'-11"	25'-6"	23'-10"	30'-7"	28'-11"	27'-0"	33'-10"	32'-1"	29'-11"
		50	10	22'-2"	21'-3"	20'-3"	25'-3"	24'-2"	23'-0"	25'-10"	25'-3"	24'-5"	25'-4"	24'-4"	23'-1"	28'-8"	27'-7"	26'-2"	31'-10"	30'-7"	29'-1"
		50	15	22'-2"	21'-2"	19'-9"	23'-9"	23'-0"	21'-11"	23'-9"	23'-0"	21'-11"	25'-4"	24'-2"	22'-7"	28'-8"	27'-5"	25'-7"	29'-8"	28'-8"	27'-5"
		4" o.c.	Non-Snow 125%	20	10	26'-11"	25'-5"	23'-7"	30'-7"	28'-10"	26'-10"	33'-11"	32'-0"	29'-8"	30'-9"	29'-0"	27'-0"	34'-10"	32'-11"	30'-7"	38'-7"
20	15			25'-6"	23'-11"	22'-1"	28'-11"	27'-2"	25'-2"	32'-1"	30'-2"	27'-10"	29'-1"	27'-4"	25'-3"	33'-0"	31'-0"	28'-8"	36'-7"	34'-4"	31'-9"
20	20			24'-3"	22'-9"	20'-11"	27'-7"	25'-10"	23'-10"	30'-7"	28'-8"	26'-4"	27'-9"	26'-0"	23'-11"	31'-5"	29'-6"	27'-1"	34'-10"	32'-8"	30'-1"
Snow 115%	25		10	25'-6"	24'-2"	22'-6"	29'-0"	27'-6"	25'-7"	32'-2"	30'-5"	28'-4"	29'-2"	27'-7"	25'-9"	33'-1"	31'-4"	29'-2"	36'-8"	34'-8"	32'-4"
	25		15	24'-4"	22'-11"	21'-3"	27'-8"	26'-1"	24'-2"	30'-8"	28'-11"	26'-9"	27'-10"	26'-3"	24'-4"	31'-6"	29'-9"	27'-6"	34'-11"	32'-11"	30'-6"
	30		10	24'-5"	23'-1"	21'-7"	27'-9"	26'-3"	24'-6"	30'-9"	29'-1"	27'-2"	27'-11"	26'-5"	24'-8"	31'-7"	29'-11"	28'-0"	35'-0"	33'-2"	31'-0"
	30		15	23'-4"	22'-1"	20'-6"	26'-7"	25'-1"	23'-4"	27'-4"	26'-1"	24'-5"	26'-9"	25'-3"	23'-5"	30'-3"	28'-7"	26'-7"	33'-7"	31'-8"	29'-5"
	40		10	22'-2"	21'-3"	20'-1"	24'-9"	24'-1"	22'-10"	24'-9"	24'-1"	23'-1"	25'-4"	24'-4"	23'-0"	28'-8"	27'-7"	26'-1"	30'-11"	30'-0"	28'-10"
	40		15	21'-10"	20'-8"	19'-3"	22'-5"	21'-6"	20'-5"	22'-5"	21'-6"	20'-5"	24'-11"	23'-7"	22'-0"	27'-9"	26'-8"	25'-0"	28'-0"	26'-11"	25'-6"
	50		10	20'-6"	19'-8"	18'-9"	20'-8"	20'-2"	19'-6"	20'-8"	20'-2"	19'-6"	23'-5"	22'-6"	21'-5"	25'-7"	24'-11"	24'-1"	25'-9"	25'-2"	24'-4"
	50		15	19'-0"	18'-4"	17'-6"	19'-0"	18'-4"	17'-6"	19'-0"	18'-4"	17'-6"	23'-4"	22'-4"	20'-11"	23'-6"	22'-9"	21'-8"	23'-8"	22'-11"	21'-10"

- Table values are limited by shear, moment, total load deflection equal to L/180 and live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Table values represent the most restrictive of simple or multiple span applications. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of the tables by analyzing a specific application with the BC Calc® software.
- Slope roof joists at least 1/4" over 12" to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Allowable Uniform Roof Load in pounds per lineal foot (PLF)

115% and 125% Load Duration

Use of these tables should be limited to roof slopes of 3½" per foot or less.
For steeper slopes, see pages 15-18.

BCI® 45000s 1.8 Joist 1¾" Flange Width												
Span Length	9½"			11⅞"			14"			16"		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
	6	315	343	-	338	367	-	353	383	-	356	387
7	270	294	-	289	315	-	302	329	-	305	332	-
8	236	257	-	253	275	-	264	287	-	267	290	-
9	210	228	-	225	245	-	235	255	-	237	258	-
10	189	205	-	202	220	-	211	230	-	214	232	-
11	172	187	-	184	200	-	192	209	-	194	211	-
12	147	160	-	169	183	-	176	191	-	178	193	-
13	125	136	-	156	159	-	162	177	-	164	179	-
14	108	118	107	139	151	-	151	164	-	152	166	-
15	94	102	88	121	131	-	141	153	-	142	155	-
16	83	90	73	106	115	-	126	137	-	133	145	-
17	73	80	61	94	102	-	111	121	-	125	136	-
18	65	67	51	84	91	-	99	108	-	113	123	-
19	58	58	44	75	82	73	89	97	-	102	111	-
20	49	49	38	68	74	63	80	87	-	92	100	-
21	43	43	33	61	67	54	73	79	-	83	90	-
22				56	61	47	66	72	-	76	82	-
23				51	54	42	61	66	-	69	75	-
24				47	48	37	56	60	54	64	69	-
25				43	43	32	51	56	48	59	64	-
26							47	51	42	54	59	-
27							44	48	38	50	54	-
28							41	44	34	47	51	46
29										43	47	41
30										40	44	37

Total Load values are limited by shear, moment, or deflection equal to L/180.

- Deflection values (**Deflect.**) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the **Total Load** and **Deflect** columns must be checked. Where a deflection value is not shown, the total load value will control.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less

Table values apply to either simple or multiple span joists. Span is measured center-to-center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.

- Slope roof joists at least ¼" over 12" to minimize ponding
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Allowable Uniform Roof Load in pounds per lineal foot (PLF)

115% and 125% Load Duration

Use of these tables should be limited to roof slopes of 3½" per foot or less.
For steeper slopes, see pages 15-18.

Span Length	BCI® 5000s 1.8 Joist 2" Flange Width								
	9½"			11⅞"			14"		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
6	315	343	-	338	367	-	353	383	-
7	270	294	-	289	315	-	302	329	-
8	236	257	-	253	275	-	264	287	-
9	210	228	-	225	245	-	235	255	-
10	189	205	-	202	220	-	211	230	-
11	172	187	-	184	200	-	192	209	-
12	157	171	-	169	183	-	176	191	-
13	145	158	-	156	169	-	162	177	-
14	125	136	120	144	157	-	151	164	-
15	109	118	98	135	147	-	141	153	-
16	95	104	81	122	133	-	132	143	-
17	85	89	68	108	118	-	124	135	-
18	75	76	58	96	105	-	114	124	-
19	65	65	49	87	94	82	103	112	-
20	56	56	42	78	85	71	93	101	-
21	48	48	37	71	77	61	84	91	-
22	42	42	32	64	70	54	76	83	-
23				59	62	47	70	76	68
24				54	54	41	64	70	60
25				48	48	37	59	64	54
26				43	43	33	55	59	48
27							51	55	43
28							47	50	38

- **Total Load** values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (**Deflect.**) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the **Total Load** and **Deflect** columns must be checked. Where a deflection value is not shown, the total load value will control.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- Table values apply to either simple or multiple span joists. Span is measured center-to-center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Slope roof joists at least ¼" over 12" to minimize ponding.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Allowable Uniform Roof Load
in pounds per lineal foot (PLF)

115% and 125% Load Duration

Use of these tables should be limited to roof slopes of 3½" per foot or less.
For steeper slopes, see pages 15-18.

Span Length	BCI® 6000s 1.8 Joist 2 ⁵ / ₁₆ " Flange Width											
	9½"			11 ⁷ / ₈ "			14"			16'		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
6	360	392	-	375	408	-	390	424	-	398	432	-
7	309	336	-	322	350	-	334	364	-	341	371	-
8	270	294	-	281	306	-	293	318	-	298	324	-
9	240	261	-	250	272	-	260	283	-	265	288	-
10	216	235	-	225	245	-	234	254	-	238	259	-
11	196	213	-	204	222	-	213	231	-	217	236	-
12	180	196	-	187	204	-	195	212	-	199	216	-
13	166	180	-	173	188	-	180	196	-	183	199	-
14	145	158	135	161	175	-	167	182	-	170	185	-
15	126	137	111	150	163	-	156	169	-	159	173	-
16	111	121	92	140	153	-	146	159	-	149	162	-
17	98	101	78	126	137	-	137	149	-	140	152	-
18	86	86	66	112	122	108	130	141	-	132	144	-
19	74	74	56	101	110	92	120	130	-	125	136	-
20	63	63	48	91	99	80	108	117	-	119	129	-
21	55	55	42	83	90	69	98	107	-	112	122	-
22	48	48	36	75	79	60	89	97	88	102	111	-
23	42	42	32	69	70	53	82	89	78	93	101	-
24				61	61	47	75	81	68	86	93	-
25				54	54	42	69	75	61	79	86	-
26				49	49	37	64	69	54	73	79	-
27				43	43	33	59	63	48	67	73	65
28							55	57	44	63	68	58

- **Total Load** values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (**Deflect.**) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the **Total Load** and **Deflect.** columns must be checked. Where a deflection value is not shown, the total load value will control.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- Table values apply to either simple or multiple span joists. Span is measured center-to-center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Slope roof joists at least ¼" over 12" to minimize ponding.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Allowable Uniform Roof Load in pounds per lineal foot (PLF)

115% and 125% Load Duration

Use of these tables should be limited to roof slopes of 3½" per foot or less.
For steeper slopes, see pages 15-18.

Span Length	BCI® 6500s 1.8 Joist 2 ⁹ / ₁₆ " Flange Width											
	9½"			11 ⁷ / ₈ "			14"			16"		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
6	360	392	-	375	408	-	390	424	-	398	432	-
7	309	336	-	322	350	-	334	364	-	341	371	-
8	270	294	-	281	306	-	293	318	-	298	324	-
9	240	261	-	250	272	-	260	283	-	265	288	-
10	216	235	-	225	245	-	234	254	-	238	259	-
11	196	213	-	204	222	-	213	231	-	217	236	-
12	180	196	-	187	204	-	195	212	-	199	216	-
13	166	180	-	173	188	-	180	196	-	183	199	-
14	154	168	147	161	175	-	167	182	-	170	185	-
15	140	152	121	150	163	-	156	169	-	159	173	-
16	123	132	101	140	153	-	146	159	-	149	162	-
17	109	111	85	132	144	-	137	149	-	140	152	-
18	94	94	72	125	135	118	130	141	-	132	144	-
19	80	80	61	112	122	101	123	134	-	125	136	-
20	69	69	53	101	110	87	117	127	-	119	129	-
21	60	60	46	91	99	76	108	118	-	113	123	-
22	52	52	40	83	87	66	99	107	96	108	118	-
23	46	46	35	76	76	58	90	98	84	103	112	-
24	41	41	31	67	67	51	83	90	74	95	103	-
25				60	60	45	76	83	66	87	95	-
26				53	53	40	71	77	59	81	88	79
27				47	47	36	65	69	53	75	81	71
28				43	43	32	61	62	47	69	76	63
29							56	56	43	65	70	57
30							51	51	39	60	66	52
31							46	46	35	57	62	47
32							42	42	32	53	56	43
33										50	51	39
34										47	47	36
35										43	43	33

- **Total Load** values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (**Deflect.**) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the **Total Load** and **Deflect.** columns must be checked. Where a deflection value is not shown, the total load value will control.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- Table values apply to either simple or multiple span joists. Span is measured center-to-center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Slope roof joists at least ¼" over 12" to minimize ponding.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Allowable Uniform Roof Load
in pounds per lineal foot (PLF)

115% and 125% Load Duration

Use of these tables should be limited to roof slopes of 3½" per foot or less.
For steeper slopes, see pages 15-18.

Span Length	BCI® 60s 2.0 Joist 2½" Flange Width									BCI® 90s 2.0 Joist 3½" Flange Width								
	11⅞"			14"			16"			11⅞"			14"			16"		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
6	413	449	-	413	449	-	413	449	-	507	551	-	510	555	-	514	559	-
7	354	385	-	354	385	-	354	385	-	434	472	-	437	475	-	441	479	-
8	309	335	-	309	336	-	300	336	-	380	413	-	383	417	-	385	419	-
9	275	299	-	275	299	-	275	299	-	338	367	-	340	370	-	343	372	-
10	247	269	-	247	269	-	247	269	-	304	330	-	306	333	-	308	335	-
11	225	245	-	225	245	-	225	245	-	276	300	-	278	302	-	280	305	-
12	206	224	-	206	224	-	206	224	-	253	275	-	255	277	-	257	279	-
13	190	207	-	90	207	-	190	207	-	234	254	-	235	256	-	237	258	-
14	177	192	-	177	192	-	177	192	-	217	236	-	218	238	-	220	239	-
15	165	179	-	165	179	-	165	179	-	202	220	-	204	222	-	205	223	-
16	154	168	-	154	168	-	154	168	-	190	208	-	191	209	-	192	209	-
17	145	158	-	145	158	-	145	158	-	178	194	-	180	196	-	181	197	-
18	137	149	-	137	149	-	137	149	-	169	183	-	170	185	-	171	186	-
19	130	141	123	130	141	-	130	141	-	160	174	-	161	175	-	162	176	-
20	123	134	106	123	134	-	123	134	-	152	165	-	153	166	-	154	167	-
21	118	121	92	118	121	-	118	121	-	144	157	134	145	158	-	147	159	-
22	106	106	81	106	106	-	106	106	-	138	150	118	139	151	-	140	152	-
23	93	93	71	107	117	103	107	117	-	132	136	104	133	144	-	134	145	-
24	82	82	63	103	112	9	103	112	-	120	120	92	121	138	-	128	139	-
25	73	75	56	99	106	8	99	107	-	107	107	82	122	133	117	123	134	-
26	65	65	50	94	94	72	95	103	-	96	96	73	117	128	104	118	129	-
27	58	58	44	85	85	65	91	99	87	86	86	65	113	125	104	114	124	-
28	52	52	40	76	76	58	88	96	78	77	77	59	109	110	84	110	119	-
29	47	47	36	69	69	52	85	92	71	70	70	53	100	100	76	106	115	102
30	43	43	32	62	62	47	82	84	64	63	63	48	91	91	69	102	101	93
31				56	56	43	76	76	58	57	57	44	82	82	63	89	108	85
32				51	51	39	69	69	53	52	52	40	75	75	57	86	107	77
33				47	47	36	63	63	48	48	48	36	69	69	52	82	106	71
34				43	43	33	58	58	44	44	44	33	63	63	48	85	105	65
35							53	53	41	40	40	31	58	58	44	78	104	59

- **Total Load** values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (**Deflect.**) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the **Total Load** and **Deflect.** columns must be checked. Where a deflection value is not shown, the total load value will control.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- Table values apply to either simple or multiple span joists. Span is measured center-to-center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Slope roof joists at least ¼" over 12" to minimize ponding.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

BCI® Joist Series	Joist Depth	Weight (plf)	Moment (ft-lbs)	EI x 10 ⁶ (lb-in ²)	K x 10 ⁶ (lbs)	Shear (lbs)	End Reaction [lbs]				Intermediate Reaction [lbs]			
							1½" Bearing		3½" Bearing		3½" Bearing		5¼" Bearing	
							No WS ⁽¹⁾	WS ⁽²⁾	No WS ⁽¹⁾	WS ⁽²⁾	No WS ⁽¹⁾	WS ⁽²⁾	No WS ⁽¹⁾	WS ⁽²⁾
4500s 1.8	9½"	2.1	2360	155	5	1475	950	1125	1125	1275	2100	2350	2525	2750
	11½"	2.4	3025	260	6	1625	950	1425	1425	1475	2250	2650	2525	3000
	14"	2.7	3585	380	8	1825	950	1525	1450	1725	2350	3050	2525	3200
	16"	3	4090	515	9	1975	950	1625	1475	1975	2450	3200	2525	3350
5000s 1.8	9½"	2.3	2725	175	5	1475	950	1125	1125	1275	2100	2350	2525	2750
	11½"	2.6	3435	295	6	1625	950	1425	1425	1475	2250	2850	2725	3000
	14"	2.9	4135	430	8	1825	950	1525	1475	1725	2350	3050	2525	3200
	16"	3.1	4715	580	9	1975	950	1625	1500	1975	2450	3200	2525	3350
6000s 1.8	9½"	2.5	3165	200	5	1575	1175	1375	1375	1425	2400	2650	2700	2750
	11½"	2.8	4060	335	6	1675	1175	1425	1425	1475	2500	2850	2900	3000
	14"	3.1	4815	490	8	1925	1175	1525	1525	1725	2600	3150	2925	3200
	16"	3.3	5495	660	9	2175	1175	1625	1550	1975	2650	3350	2950	3350
6500s 1.8	9½"	2.7	3505	220	5	1575	1175	1375	1375	1425	2400	2650	2700	2750
	11½"	3	4495	365	7	1675	1175	1425	1425	1475	2500	2850	2900	3000
	14"	3.3	5330	535	8	1925	1175	1525	1525	1725	2600	3150	2925	3200
	16"	3.5	6085	720	9	2175	1175	1625	1550	1975	2650	3350	2950	3350
60s 2.0	11½"	3.2	6235	450	7	1675	1175	1425	1425	1475	2750	2850	3200	3250
	14"	3.5	7440	660	8	1925	1175	1525	1525	1725	2750	3450	3200	3650
	16"	3.8	8520	895	9	2175	1175	1625	1550	1975	2750	3650	3200	3750
90s 2.0	11½"	4.3	9550	675	7	2150	1425	1850	1800	1950	3375	3700	4000	4350
	14"	4.6	11390	980	8	2350	1450	1950	1850	2150	3400	3850	4100	4450
	16"	4.9	13050	1330	9	2550	1475	2150	1900	2350	3425	4000	4200	4650

NOTES:

- (1) No web stiffeners required.
- (2) Web stiffeners required.
- Moment, shear and reaction values based upon a load duration of 100% and may be adjusted for other load durations.
- Design values listed are applicable for Allowable Stress Design (ASD).
- No additional repetitive member increase allowed.

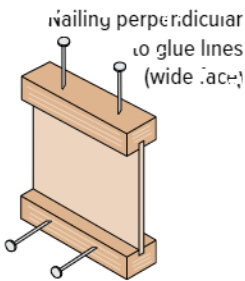
$$\Delta = \frac{5wl^4}{384EI} + \frac{wl^2}{K}$$

Δ = deflection (in) EI = bending stiffness (lb-in²)
 w = uniform load (lb/in) K = shear deformation coefficient (lb)
 l = clear span (in)

Building Code Evaluation Report

ICC-ES®/APA® ESR-1336 (IBC®, IRC®)

BCI® Joist Closest Allowable Nail Spacing



Nailing parallel to glue lines (narrow face)

Nail Size	All BCI® Joists			
	Nailing perpendicular to glue line (wide face)		Nailing parallel to glue line (narrow face)	
	O.C. Spacing	End of Joist	O.C. Spacing	End of Joist
8d Bcx (0.113"ø x 2.5")	2"	1½"	4"	1½"
8d Common (0.131"ø x 2.5")	2"	1½"	4"	3"
10d & 12d Com. (0.128"ø x 3" 3.25")	2"	1½"	4"	3"
16d Box (0.135"ø x 3.5")	2"	1½"	4"	3"
10d & 12d Common & 16d Sinker (0.148"ø x 3" 3.25")	3"	2"	6"	4"
16d Common (0.162"ø x 3.5")	3"	2"	6"	4"

- If more than one row of nails is used, the rows must be offset at least ½"
- Simpson Strong-Tie A35 connectors may be attached to the side of BC® 6Js & 9Js joist flanges only. Use nails as specified by Simpson Strong-Tie; do not attach connectors on both sides of a flange at the same location.

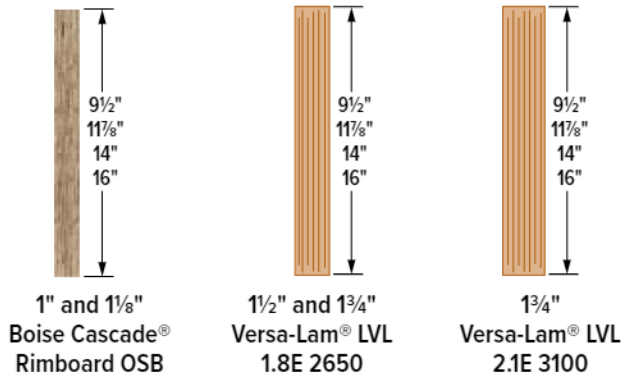
BCI® Diaphragm Table (1)

BCI® Series	Diaphragm Capacity (lb/ft) ⁽²⁾	
	Unblocked	Blocked
4500s, 5000s	As permitted for 2x framing in building code	320 lb/ft for 6" o.c. nailing at panel edges 125 lb/ft for 4" o.c. nailing, staggered, at panel edges
6000s, 6500s	As permitted for 3x framing in building code	360 lb/ft for 6" o.c. nailing at panel edges 480 lb/ft for 4" o.c. nailing, staggered at panel edges
60s, 90s	As permitted for 3x framing in building code	As permitted for 3x framing in building code not to exceed 630 lb/ft.

NOTES:

- (1) See table 7 of ICC-ES®/APA® ESR-1336.
- (2) As noted in table, BCI® joists may be substituted for solid sawn framing in horizontal wood diaphragms as shown in Tables 4.2A and 4.2C of A51/AWC SDPWS - 2015 (referenced in IBC).
- (3) Diaphragm nailing shall not exceed the limits of BCI® joist closest allowable nail spacing.

Rim Board Product Profiles



F07 Perpendicular

BC Rimboard. Min. 8d nails at 6" o.c. per IRC. Connection per design professional of record's specification for shear transfer.

See table for vertical load capacity

F07A Parallel

BC Rimboard. Min. 8d nails at 6" o.c. per IRC. Connection per design professional of record's specification for shear transfer.

See table for vertical load capacity

F56 Rim Board with Ledger Attachment

Exterior wall sheathing maximum thickness 15/32"

BCI® joists perpendicular or parallel to rim

BC Rimboard

Treated ledger; use only fasteners approved for use with treatment type.

1/2" diameter through bolts (ASTM A307 Grades A & B, SAE J429 Grades 1 or 2, or higher with washer and nuts) or 1/2" diameter lag screws (full penetration), staggered.

Minimum connection for 40/10 psf deck loading:

Deck joist length	Connection
12'-0" and less	2 rows 1/2" bolts or lag screws, 24" o.c. (300 plf max.)
12'-1" to 18'-0"	2 rows 1/2" bolts or lag screws, 16" o.c. (450 plf max.)

For snow loads greater than 40 psf and/or dead loads greater than .0 psf, size connection per max. plf values shown above.

Notes

- Design of moisture control by others (only structural components shown above).
- For information on deck lateral load connections per IRC section R507.2.3, contact Boise Cascade EWP Engineering.
- For use of proprietary screws to attach ledger, consult screw manufacturer literature.
- For further information on residential deck design, see AWC DCA 6 Prescriptive Residential Wood Deck Construction Guide.

Boise Cascade Rim Board Properties

Product	Vertical Load Capacity		Maximum Floor Diaphragm Lateral Capacity (lb/ft)	Allowable Design Values				
	Uniform (plf)	Point (lb)		Flexural Stress (lb/in ²)	Modulus of Elasticity (lb/in ²)	Horizontal Shear (lb/in)	Compression Perpendicular to Grain (lb/in ²)	
1" Boise Cascade Rimboard OSB (C2) ⁽¹⁾	3300	3500	180	Limited span capabilities, see Note 1	2650	1,800,000	285	750
1 1/8" Boise Cascade Rimboard OSB (C1) ⁽¹⁾	4200	3500	180					
1 1/2" and 1 3/4" Versa-Lam® LVL 1.8E 2650 ⁽²⁾	4250	3700	Permitted per building code for all nominal 2" thick framing floor diaphragms					
1 3/4" Versa-Lam® LVL 2.1E 3100 ⁽²⁾	5700	4300						

(1) Rim board grades C1 and C2 per APA W345 U.S. Edition *APA Performance-Rated Rim Boards*®.
 (2) See ICC-ES®/APA® ESR-1040 for more information.

Closest Allowable Nail Spacing (Narrow Face)

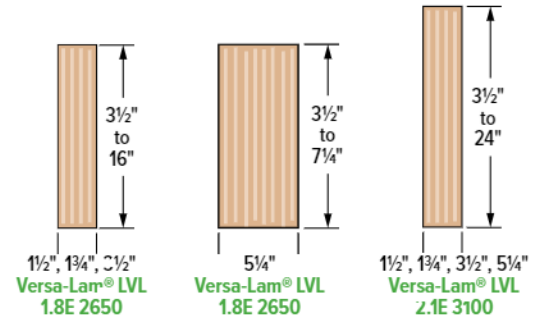
Nail Size	Boise Cascade® Rimboard OSB ⁽¹⁾		Versa-Lam® LVL Rim Board ⁽²⁾	
	1"	1 1/8"	1 1/2"	1 3/4"
8d box (0.113"ø x 2.5")	3"	3"	3"	2"
8d common (0.131"ø x 2.5")	3"	3"	3"	3"
10d & 12d box (0.128"ø x 3", 3.25")	See publication listed in note (1) for additional nailing information.		3"	3"
16d box (0.135"ø x 3.5")			3"	3"
10d & 12d common & 16d sinker (0.148"ø x 3", 3.25")			4"	4"
16d common (0.162"ø x 3.5")			6"	6"

(1) See *Performance-Rated Rim Boards*, APA® Form No. W345N for more product information.
 (2) See ICC-ES®/APA® ESR-1040 for more information.

When you specify headers and beams made of Versa-Lam® laminated veneer lumber (LVL), you are building quality into your design. They are excellent for floor and roof framing supports and as headers for doors, windows, and garage doors. Versa-Lam® LVL can even be used in column applications. Because they have no camber, Versa-Lam® LVL products provide flatter, quieter floors—which helps ensure happier customers and significantly fewer builder call backs.



Versa-Lam® LVL products shall be installed in dry-use applications only, per their respective ICC-ES/APA ESR evaluation reports.



Some products may not be available in all markets; contact your Boise Cascade EWP representative for availability.

Versa-Lam® LVL Beam Architectural Specifications

Scope: This work includes the complete furnishing and installation of all Versa-Lam® LVL beams as shown on the drawings, herein specified and necessary to complete the work.

Materials: Southern Pine or Douglas fir veneers, laminated in a press with 3/4" grain parallel with the length of the member. Glues used in lamination are phenol formaldehyde and isocyanate exterior-type adhesives which comply with ASTM D2559.

Design: Versa-Lam® LVL beams shall be sized and detailed to fit the dimensions and loads indicated on the plans. All designs shall be in accordance with allowable values developed in accordance with ASTM D5456 and listed

in the governing code evaluation service's report and section properties based upon standard engineering principles. Verification of design of the Versa-Lam® LVL beams by complete calculations shall be available upon request.

Drawings: Additional drawings showing layout and detail necessary for determining fit and placement in the buildings are (are not) to be provided by the supplier.

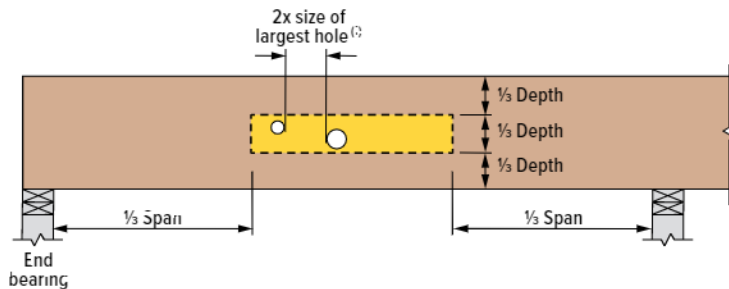
Fabrication: Versa-Lam® LVL beams shall be manufactured in a plant evaluated for fabrication by the governing code evaluation service and under the supervision of a third-party inspection agency listed by the corresponding evaluation service.

Storage and Installation: Versa-Lam® LVL beams, if stored prior to erection, shall be stored on stickers spaced a maximum of 15 ft. apart. Beams shall be stored on a dry, level surface and protected from the weather. They shall be handled with care so they are not damaged.

Versa-Lam® LVL beams are to be installed in accordance with the plans and Boise Cascade EWP's Installation Guide. Temporary construction loads which cause stresses beyond design limits are not permitted. Erection bracing shall be provided to assure adequate lateral support for the individual beams and the entire system until the sheathing material has been applied.

Codes: Versa-Lam® LVL beams shall be evaluated by a model code evaluation service.

Allowable Holes in Versa-Lam® LVL Beams



Allowable Round Holes

Table valid only for beams supporting uniform load.

Beam Depth	Max. Hole Diameter
5 1/2"	3/4"
7 1/4"	1"
9 1/4" and greater	2"

NOTES

- The horizontal distance between adjacent holes must be at least two times the size of the larger hole.
 - Round holes may be drilled or cut with a hole saw anywhere within the shaded area of the beam.
 - Square and rectangular holes are not permitted.
 - Do not drill more than three access holes in any four foot long section of beam.
 - These limitations apply to holes drilled for plumbing or wiring access only. The size and location of holes drilled for fasteners are governed by the provisions of the National Design Specification® for Wood Construction.
 - Beams deflect under load. Size holes to provide clearance where required.
- Allowable Round Holes** chart at left is valid for beams supporting uniform load only. For beams supporting concentrated loads or beams with larger holes, use BC Calc® software or contact Boise Cascade FWP Engineering.

BEARINGS AT CONCRETE/MASONRY WALLS

Provide moisture barrier and lateral restraint at bearing.

1/2" air space required between concrete and wood.

B01

BEARINGS FOR DOOR OR WINDOW HEADER

Strap per code if top plate is not continuous over header.

Trimmer studs provide bearing across full width of beam.

B02

BEAM TO BEAM CONNECTOR

Verify hanger capacity with hanger manufacturer.

B03

BEARING AT COLUMN

Versa-Lam® LVL column.

Column connector per design professional of record.

B04

SLOPE SEAT CUT

Sloped seat cut. Not to exceed inside face of bearing.

Block, cutout shown for clarity.

B05

BEVEL CUT

DO NOT bevel cut Versa-Lam® LVL beyond inside face of wall, w/ cut approval from Boise Cascade EWP Engineering or BC Calc® software analysis.

B06

BEAM TO CONCRETE/MASONRY WALLS

Wood top plate must be flush with inside of wall.

Hanger.

Moisture barrier between concrete and wood.

B07

BEARING FRAMING INTO WALL

Strap per code if top plate is not continuous.

B08

DETAIL INSTALLATION NOTES

- Minimum of 1/2" air space between beam and wall pocket. A adequate barrier must be provided between beam and concrete/masonry.
- Adequate bearing shall be provided. If not shown on plans, please refer to load tables on pages 28 - 30 of this guide.
- Versa-Lam® LVL beams are intended for interior applications only and should be kept as dry as possible during construction.
- Continuous lateral support of top of beam shall be provided (side or top bearing framing).

Multiple Member Connections

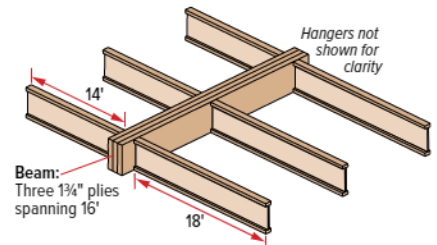
Side-Loaded Applications Maximum Uniform Side Load (PLF)								
Number of Plies	Nailed (1)		1/2" Dia. Through Bolt (1)			5/8" Dia. Through Bolt (1)		
	2 rows 16d Sinkers @ 12" o.c.	3 rows 16d Sinkers @ 12" o.c.	2 rows @ 24" o.c. staggered	2 rows @ 12" o.c. staggered	2 rows @ 6" o.c. staggered	2 rows @ 24" o.c. staggered	2 rows @ 12" o.c. staggered	2 rows @ 6" o.c. staggered
1 1/4" Versa-Lam® LVL (Depths of 18" and less)								
2	475	705	305	0.0	202	360	112	2245
3 (2)	350	525	375	755	1515	420	840	1685
4 (3)	use bolt schedule	335	670	1345	370	745	1495	
3/4" Versa-Lam® LVL								
2 (4)	use bolt schedule	855	171	N/A	112	225	N/A	
Number of Plies	Nailed (2)		1/2" Dia. Through Bolt (1)			5/8" Dia. Through Bolt (1)		
	rows 16d Sinkers @ 12" o.c.	4 rows 16d Sinkers @ 12" o.c.	3 rows @ 24" o.c. staggered	3 rows @ 18" o.c. 6" staggered	3 rows @ 12" o.c. 4" staggered	3 rows @ 24" o.c. 8" staggered	3 rows @ 18" o.c. 6" staggered	3 rows @ 12" o.c. 4" staggered
1 3/4" Versa-Lam® LVL (Depths of 24" and less)								
2	705	940	755	1010	1515	840	1120	1685
3 (2)	525	705	565	755	1135	620	840	1260
4 (4)	use bolt schedule	505	670	1010	560	745	1120	

- (1) Design values apply to common bolts that conform to ANSI/AISC standard B18 21-1981 (ASTM A307 Grades A&B, SAE J429 Grades 1 or 2, or higher). A washer not less than a standard flat washer shall be between the wood and the bolt head and between the wood and the nut. The distance from the edge of the beam to the bolt holes must be at least 2" for 1/2" bolts and 2 1/2" for 5/8" bolts. Bolt holes shall be the same diameter as the bolt.
- (2) The nail schedules shown apply to both sides of a 2-ply beam.
- (3) 16d box nails = 0.135" diameter x 3 1/2" length. 16d sinker nails = 0.130" diameter x 3.25" length.
- (4) 7" wide beam must be top loaded or loaded from both sides; reverse side shall be no less than 25% of opposite side.

Designing Connections For Multiple-Ply Versa-Lam® LVL Beams

When using multiple ply Versa-Lam® LVL beams to create a wider member, the connection of the plies is as critical as determining the beam size. When side loaded beams are not connected properly, the inside plies do not support their share of the load and thus the load-carrying capacity of the full member decreases significantly.

The following example shows how to size and connect a multiple-ply Versa-Lam® LVL floor beam.



Given: Beam (shown above) with a span of 16'-0" is supporting a residential floor load (40 psf live load, 10 psf dead load) - the beam depth is limited to 14"

Find: A beam of multiple 1 3/4" plies of Versa-Lam® LVL that can support the design loads, plus the beam's proper connection schedule.

1. Calculate tributary width and load the that beam is supporting:
 $14'/2 + 8'/2 = 16 \text{ ft. tributary width}$
 Live Load: $40 \text{ psf} \times 16 \text{ ft.} = 640 \text{ plf}$
 Dead Load: $10 \text{ psf} \times 16 \text{ ft.} = 160 \text{ plf}$
 Total Load: $640 \text{ plf} + 160 \text{ plf} = 800 \text{ plf}$
2. Use PLF table on page 28 or BC Calc® software to size beam.
 A 3-ply Versa-Lam® LVL 1 3/4" x 14" beam will adequately support the calculated design load.
3. Calculate the maximum plf load from longest side (18' in this case).
 Max. Side Load = $(18'/2) \times (40 + 10 \text{ psf}) = 450 \text{ plf}$
4. In the multiple member connection table for **Side-Loaded Application**, check the row for 3 plies of 1 3/4" Versa-Lam® LVL.
5. The proper connection schedule must have a capacity greater than the max. side load:
 Nailed: 3 rows 16d sinkers @ 12" o.c.
 525 plf is greater than 450 plf OK
 Bolt: 1/2" dia. hole, 2 rows @ 12" staggered:
 755 plf is greater than 450 plf OK

Top-Loaded Applications For top-loaded beams with bearing on both side loads refer to Side-Loaded Applications table above			
Plies	Depth	Nailing (2)	Maximum Uniform Load From One Side
Two 1 3/4" plies	Depths 11 3/8" & less	2 rows 16d box/sinker nails @ 12" o.c.	400 plf
	Depths 14" - 16"	3 rows 16d box/sinker nails @ 12" o.c.	600 plf
	Depth = 24"	4 rows 16d box/sinker nails @ 12" o.c.	800 plf
Three 1 3/4" plies (1)	Depths 11 3/8" & less	2 rows 16d box/sinker nails @ 12" o.c.	300 plf
	Depths 14" - 16"	3 rows 16d box/sinker nails @ 12" o.c.	450 plf
	Depth = 24"	4 rows 16d box/sinker nails @ 12" o.c.	600 plf
Four 1 3/4" plies	Depths 18" & less	2 rows 1/2" bolts @ 24" o.c., staggered	335 plf
	Depth = 24"	3 rows 1/2" bolts @ 24" o.c., staggered every 8"	505 plf
Two 3/4" plies	Depths 18" & less	2 rows 1/2" bolts @ 24" o.c., staggered	855 plf
	Depth 24" - 24"	3 rows 1/2" bolts @ 24" o.c., staggered every 8"	1285 plf

- (1) The nail schedule shown apply to both sides of a 3-member beam.
 16d box nails = 0.135" diameter x 3 1/2" length.
 16d sinker nails = 0.130" diameter x 3.25" length.
- (2) Beams wider than 7" must be designed by the engineer of record.
 All values in these tables may be increased by 15% for snow load roofs and by 25% for non-snow load roofs where the building code allows.
 Use allowable load values or BC Calc® software to size beam.
- (3) An equivalent specific gravity of 0.5 may be used when designing specific connections with Versa-Lam® LVL.
- (4) Connection values are based upon the NDS, 2018 Edition.
 FastenMaster® Truss-LOCK®, Simpson Strong-Tie SUDW or SuS, and MiTek WS screws may also be used to connect multiple member Versa-Lam® LVL beams. Contact Boise Cascade EWP Engineering for more information.

Versa-Lam® LVL: Floor Load Table

Versa-Lam® LVL 2.1E 3100 (100% Load Duration)

Table Key: Top value = Allowable Total Load (PLF)
 Middle value = Allowable Live Load (F/LF)
 Bottom value = Min. Required Bearing Length (inches) at End/Intermediate supports

Beam Span (ft)	1 3/4" Versa-Lam® LVL				2 1/2" Versa-Lam® LVL 2-Ply 1 3/4" or Single 3 1/2"					5 1/4" Versa-Lam® LVL 3-Ply 1 3/4" or Single 5 1/4"					7" Versa-Lam® LVL 4-Ply 1 3/4" or 2-Ply 3 1/2"							
	Beam Depth				Beam Depth					Beam Depth					Beam Depth							
	7 1/4"	9 1/2"	11 5/8"	14"	7 1/4"	9 1/2"	11 5/8"	14"	16"	18"	9 1/2"	11 5/8"	14"	16"	18"	20"	11 5/8"	14"	16"	18"	20"	24"
6	763	903	1424	1444	1525	2126	284	390	4387	474	3.8	4273	5334	6300	7391	7138	5697	7179	3773	9588	9334	9576
7	844	1000	1500	1544	1625	2226	294	400	4487	484	4.1	4553	5614	6580	7671	7418	5977	7459	3863	9698	9444	9686
8	930	1100	1600	1644	1725	2326	304	410	4587	494	4.4	4639	5699	6665	7756	7503	6065	7546	3949	9788	9534	9776
9	1020	1200	1700	1744	1825	2426	314	420	4687	504	4.7	4725	5785	6751	7842	7589	6151	7632	4039	9878	9624	9866
10	1110	1300	1800	1844	1925	2526	324	430	4787	514	5.0	4811	5871	6837	7928	7675	6237	7718	4129	9968	9714	9956
11	1200	1400	1900	1944	2025	2626	334	440	4887	524	5.3	4895	5955	6921	8012	7759	6319	7800	4219	10058	9804	10046
12	1290	1500	2000	2044	2125	2726	344	450	4987	534	5.6	4979	6039	7005	8096	7843	6409	7890	4309	10148	9894	10136
13	1380	1600	2100	2144	2225	2826	354	460	5087	544	5.9	5063	6123	7089	8180	7927	6499	7980	4399	10238	10004	10246
14	1470	1700	2200	2244	2325	2926	364	470	5187	554	6.2	5147	6207	7173	8261	8007	6589	8070	4489	10328	10094	10306
15	1560	1800	2300	2344	2425	3026	374	480	5287	564	6.5	5231	6291	7257	8342	8087	6679	8160	4579	10418	10184	10396
16	1650	1900	2400	2444	2525	3126	384	490	5387	574	6.8	5315	6375	7341	8423	8167	6769	8250	4669	10508	10274	10486
17	1740	2000	2500	2544	2625	3226	394	500	5487	584	7.1	5399	6459	7427	8504	8253	6859	8340	4759	10598	10364	10576
18	1830	2100	2600	2644	2725	3326	404	510	5587	594	7.4	5483	6543	7513	8585	8339	6949	8430	4849	10688	10454	10666
19	1920	2200	2700	2744	2825	3426	414	520	5687	604	7.7	5567	6627	7599	8666	8425	7039	8520	4939	10778	10544	10756
20	2010	2300	2800	2844	2925	3526	424	530	5787	614	8.0	5651	6711	7685	8747	8511	7129	8610	5029	10868	10634	10846
21	2100	2400	2900	2944	3025	3626	434	540	5887	624	8.3	5735	6795	7771	8828	8597	7219	8700	5119	10958	10724	10936
22	2190	2500	3000	3044	3125	3726	444	550	5987	634	8.6	5819	6879	7857	8909	8683	7309	8790	5209	11048	10814	11026
23	2280	2600	3100	3144	3225	3826	454	560	6087	644	8.9	5903	6963	7943	8990	8769	7399	8880	5299	11138	10904	11116
24	2370	2700	3200	3244	3325	3926	464	570	6187	654	9.2	5987	7047	8029	9071	8855	7489	8970	5389	11228	10994	11206
25	2460	2800	3300	3344	3425	4026	474	580	6287	664	9.5	6071	7131	8115	9152	8941	7579	9060	5479	11318	11084	11296
26	2550	2900	3400	3444	3525	4126	484	590	6387	674	9.8	6155	7215	8201	9233	9027	7669	9150	5569	11408	11174	11386
27	2640	3000	3500	3544	3625	4226	494	600	6487	684	10.1	6239	7299	8287	9314	9113	7759	9240	5659	11498	11264	11476
28	2730	3100	3600	3644	3725	4326	504	610	6587	694	10.4	6323	7383	8373	9395	9200	7849	9330	5749	11588	11354	11566
29	2820	3200	3700	3744	3825	4426	514	620	6687	704	10.7	6407	7467	8459	9476	9286	7939	9420	5839	11678	11444	11656
30	2910	3300	3800	3844	3925	4526	524	630	6787	714	11.0	6491	7551	8545	9557	9372	8029	9510	5929	11768	11534	11746

- Total Load values are limited by shear, moment or deflection equal to L/240. Total Load values are the capacity of the beam in addition to its own weight.
- Live Load values are limited by deflection equal to L/360. Check the local building code for other deflection limits that may apply.
- Where a Live Load value is not shown, the Total Load value will control.
- Table values represent the most restrictive of simple or multiple span applications. Span is measured center-to-center of the supports. Analyze multiple span beams with BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume that lateral support is provided at each support and continuously along the top edge and applicable compression edges of the beam.

- Table values for Minimum Required Bearing Lengths are based on the allowable compression design value perpendicular to grain for the beam and the Total Load value shown. Other design considerations, such as weaker support material, may warrant longer bearing lengths. Table values assume that support is provided across the full width of the beam.
- For 2-ply, 3-ply or 4-ply beams; double, triple or quadruple allowable total load and allowable live load values. Minimum required bearing lengths remain the same for any number of plies.
- 1 3/4" members deeper than 14" are to be used as multiple-member beams only. It may be possible to exceed this limitation by analyzing a specific, properly braced application using BC Calc® software.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with BC Calc® software.

Versa-Lam® LVL 2.1E 3100
Snow (115%) Load Duration

Table Key: Top value = Allowable Total Load (PLF)
Middle value = Allowable Live Load (PLF)
Bottom value = Min. Required Bearing Length (inches) at End or Intermediate supports

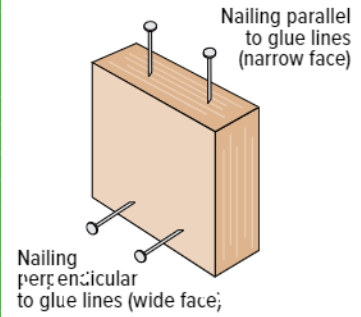
Beam Span (ft)	1 3/4" Versa-Lam® LVL				3 1/2" Versa-Lam® LVL 2-Ply 1 3/4" or Single 3 1/2"					5 1/4" Versa-Lam® LVL 3-Ply 1 3/4" or Single 5 1/4"						7" Versa-Lam® LVL 4-Ply 1 3/4" or 2-Ply 3 1/2"						
	Beam Depth				Beam Depth					Beam Depth						Beam Depth						
	7 1/4"	8 1/2"	11 3/8"	14"	7 1/4"	9 1/2"	11 3/8"	14"	16"	18"	9 1/2"	11 3/8"	14"	16"	18"	20"	11 3/8"	14"	16"	18"	20"	24"
6	878	1223	1639	2065	1755	2446	3278	4130	4796	4794	3669	4917	6195	7194	7191	7188	6556	8260	9592	9588	9584	9576
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/5	2.8/7	3.8/9.4	4.7/11.8	2/5	2.8/7	3.8/9.4	4.7/11.8	5.5/13.8	5.5/13.8	2.8/7	3.8/9.4	4.7/11.8	5.5/13.8	5.5/13.8	5.5/13.8	3.8/9.4	4.7/11.8	5.5/13.8	5.5/13.8	5.5/13.8	5.5/13.8
7	731	1009	1335	1661	1463	2018	2670	3323	4007	4107	3027	4006	4984	6010	6160	6157	5341	6646	8013	8213	8209	8201
	678	-	-	-	1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2/4.9	2.7/6.8	3.6/8.9	4.4/11.1	2/4.9	2.7/6.8	3.6/8.9	4.4/11.1	5.4/13.4	5.5/13.8	2.7/6.8	3.6/8.9	4.4/11.1	5.4/13.4	5.5/13.8	5.5/13.8	3.6/8.9	4.4/11.1	5.4/13.4	5.5/13.8	5.5/13.8	5.5/13.8
8	598	858	1126	1389	1197	1717	2252	2779	3321	3591	2575	3379	4168	4981	5387	5384	4505	5558	6642	7182	7178	7170
	466	-	-	-	931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.8/4.6	2.6/6.6	3.5/8.6	4.3/10.6	1.8/4.6	2.6/6.6	3.5/8.6	4.3/10.6	5.1/12.7	5.5/13.8	2.6/6.6	3.5/8.6	4.3/10.6	5.1/12.7	5.5/13.8	5.5/13.8	3.5/8.6	4.3/10.6	5.1/12.7	5.5/13.8	5.5/13.8	5.5/13.8
9	440	747	974	1194	880	1493	1947	2387	2835	3190	2240	2921	3581	4252	4785	4782	3894	4774	5670	6380	6376	6368
	333	715	-	-	665	1431	-	-	-	-	2146	-	-	-	-	-	-	-	-	-	-	-
	1.5/3.8	2.6/6.4	3.4/8.4	4.1/10.3	1.5/3.8	2.6/6.4	3.4/8.4	4.1/10.3	4.9/12.2	5.5/13.8	2.6/6.4	3.4/8.4	4.1/10.3	4.9/12.2	5.5/13.8	5.5/13.8	3.4/8.4	4.1/10.3	4.9/12.2	5.5/13.8	5.5/13.8	5.5/13.8
10	324	637	857	1046	648	1274	1714	2092	2472	2869	1912	2571	3138	3709	4304	4301	3429	4184	4945	5738	5734	5726
	246	532	-	-	491	1065	-	-	-	-	1597	-	-	-	-	-	-	-	-	-	-	-
	1.5/3.1	2.4/6.1	3.3/8.2	4/10	1.5/3.1	2.4/6.1	3.3/8.2	4/10	4.7/11.9	5.5/13.8	2.4/6.1	3.3/8.2	4/10	4.7/11.9	5.5/13.8	5.5/13.8	3.3/8.2	4/10	4.7/11.9	5.5/13.8	5.5/13.8	5.5/13.8
11	245	526	765	931	489	1052	1531	1861	2192	2543	1577	2296	2792	3288	3814	3907	3062	3723	4383	5085	5209	5201
	186	406	762	-	372	812	1523	-	-	-	1218	2285	-	-	-	-	3046	-	-	-	-	-
	1.5/3	2.2/5.6	3.2/8.1	3.9/9.8	1.5/3	2.2/5.6	3.2/8.1	3.9/9.8	4.6/11.6	5.4/13.4	2.2/5.6	3.2/8.1	3.9/9.8	4.6/11.6	5.4/13.4	5.5/13.8	3.2/8.1	3.9/9.8	4.6/11.6	5.4/13.4	5.5/13.8	5.5/13.8
12	189	417	674	838	378	834	1347	1676	1968	2276	1252	2021	2514	2952	3414	3579	2694	3353	3936	4552	4772	4764
	144	317	597	-	289	633	1194	-	-	-	950	1791	-	-	-	-	2389	-	-	-	-	-
	1.5/3	1.9/4.8	3.1/7.8	3.9/9.7	1.5/3	1.9/4.8	3.1/7.8	3.9/9.7	4.5/11.3	5.2/13.1	1.9/4.8	3.1/7.8	3.9/9.7	4.5/11.3	5.2/13.1	5.5/13.8	3.1/7.8	3.9/9.7	4.5/11.3	5.2/13.1	5.5/13.8	5.5/13.8
13	149	330	573	762	297	660	1146	1524	1785	2060	991	1719	2287	2678	3089	3301	2292	3049	3571	4119	4402	4394
	114	251	476	756	229	503	953	1513	-	-	754	1429	2269	-	-	-	1905	3026	-	-	-	-
	1.5/3	1.7/4.1	2.9/7.2	3.8/9.5	1.5/3	1.7/4.1	2.9/7.2	3.8/9.5	4.5/11.2	5.1/12.9	1.7/4.1	2.9/7.2	3.8/9.5	4.5/11.2	5.1/12.9	5.5/13.8	2.9/7.2	3.8/9.5	4.5/11.2	5.1/12.9	5.5/13.8	5.5/13.8
14	119	265	493	674	238	531	987	1349	1634	1880	796	1480	2023	2450	2821	3063	1973	2697	3267	3761	4084	4076
	92	203	386	615	184	405	771	1230	-	-	608	1157	1845	-	-	-	1543	2460	-	-	-	-
	1.5/3	1.5/3.6	2.7/6.7	3.6/9.1	1.5/3	1.5/3.6	2.7/6.7	3.6/9.1	4.4/11	5.1/12.7	1.5/3.6	2.7/6.7	3.6/9.1	4.4/11	5.1/12.7	5.5/13.8	2.7/6.7	3.6/9.1	4.4/11	5.1/12.7	5.5/13.8	5.5/13.8
15	96	216	416	586	193	432	832	1173	1505	1730	649	1248	1759	2258	2595	2857	1664	2346	3011	3459	3809	3801
	75	166	317	506	150	332	633	1013	1473	-	497	950	1519	2210	-	-	1266	2025	2946	-	-	-
	1.5/3	1.5/3.2	2.4/6	3.4/8.5	1.5/3	1.5/3.2	2.4/6	3.4/8.5	4.3/10.9	5/12.5	1.5/3.2	2.4/6	3.4/8.5	4.3/10.9	5/12.5	5.5/13.8	2.4/6	3.4/8.5	4.3/10.9	5/12.5	5.5/13.8	5.5/13.8
16	79	178	344	515	158	356	689	1029	1327	1601	535	1033	1544	1990	2402	2677	1377	2058	2653	3202	3569	3561
	62	137	263	421	124	275	526	843	1230	-	412	788	1264	1845	-	-	1051	1686	2460	-	-	-
	1.5/3	1.5/3	2.1/5.3	2.3/7.9	1.5/3	1.5/3	2.1/5.3	2.3/7.9	4.1/10.2	4.9/12.3	1.5/3	2.1/5.3	2.3/7.9	4.1/10.2	4.9/12.3	5.5/13.8	2.1/5.3	2.3/7.9	4.1/10.2	4.9/12.3	5.5/13.8	5.5/13.8
17	65	148	288	455	131	297	576	910	1173	1468	445	864	1365	1760	2201	2517	1152	1820	2346	2935	3356	3348
	52	115	220	354	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	1.5/3	1.5/3	1.9/4.8	3/7.5	1.5/3	1.5/3	1.9/4.8	3/7.5	3.9/9.6	4.8/12	1.5/3	1.9/4.8	3/7.5	3.9/9.6	4.8/12	5.5/13.8	1.9/4.8	3/7.5	3.9/9.6	4.8/12	5.5/13.8	5.5/13.8
18	55	125	243	394	109	249	486	788	1045	1307	374	729	1182	1567	1961	2364	972	1576	2089	2614	3151	3160
	44	97	187	301	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	1.5/3	1.5/3	1.7/4.3	2.8/6.9	1.5/3	1.5/3	1.7/4.3	2.8/6.9	3.6/9.1	4.5/11.4	1.5/3	1.7/4.3	2.8/6.9	3.6/9.1	4.5/11.4	5.5/13.8	1.7/4.3	2.8/6.9	3.6/9.1	4.5/11.4	5.5/13.8	5.5/13.8
19	46	106	207	336	92	211	413	672	936	1171	317	620	1008	1404	1757	2147	827	1344	1872	2342	2862	2991
	37	83	160	257	74	166	319	515	756	1056	249	479	772	1133	1584	2130	638	1029	1511	2112	2839	-
	1.5/3	1.5/3	1.5/3.8	2.5/6.2	1.5/3	1.5/3	1.5/3.8	2.5/6.2	3.4/8.6	4.3/10.8	1.5/3	1.5/3.8	2.5/6.2	3.4/8.6	4.3/10.8	5.3/13.1	1.5/3.8	2.5/6.2	3.4/8.6	4.3/10.8	5.3/13.1	5.5/13.8
20	90	177	289	457	124	289	557	843	1055	1327	270	531	866	1265	1583	1934	708	1155	1686	2110	2579	2839
	71	137	222	344	142	275	444	652	913	1230	214	412	666	979	1370	1845	549	887	1305	1827	2460	-
	1.5/3	1.5/3.5	2.3/5.6	3.3/8.2	1.5/3	1.5/3.5	2.3/5.6	3.3/8.2	4.1/10.2	5.1/12.5	1.5/3.5	2.3/5.6	3.3/8.2	4.1/10.2	5.1/12.5	5.5/13.8	1.5/3.5	2.3/5.6	3.3/8.2	4.1/10.2	5.1/12.5	5.5/13.8
22	67	132	217	344	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	54	104	168	264	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	1.5/3	1.5/3	1.9/4.7	2.8/6.9	1.5/3	1.5/3	1.9/4.7	2.8/6.9	3.7/9.3	4.5/11.3	1.5/3	1.5/3	1.9/4.7	2.8/6.9	3.7/9.3	4.5/11.3	1.5/3	1.9/4.7	2.8/6.9	3.7/9.3	4.5/11.3	5.5/13.8
24	51	101	167	264	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	42	80	130	207	74	166	319	515	756	1056	249	479	772	1133	1							

Versa-Lam® LVL 2.1E 3100
Non-Snow (125%) Load Duration

Table Key: Top value = Allowable Total Load (PLF)
Middle value = Allowable Live Load (PLF)
Bottom value = Min. Required Bearing Length (inches) at End/Intermediate supports

Beam Span (ft)	1 3/4" Versa-Lam® LVL				3 1/2" Versa-Lam® LVL 2-Ply 1 3/4" or Single 3 1/2"				5 1/4" Versa-Lam® LVL 3-Ply 1 3/4" or Single 5 1/4"					7" Versa-Lam® LVL 4-Ply 1 3/4" or 2-Ply 3 1/2"								
	Beam Depth				Beam Depth				Beam Depth					Beam Depth								
	7 1/4"	9 1/2"	11 7/8"	14"	7 1/4"	9 1/2"	11 7/8"	14"	16"	18"	9 1/2"	11 7/8"	14"	16"	18"	20"	11 7/8"	14"	16"	18"	20"	24"
6	954	1330	1782	2245	1908	2660	3564	4491	4796	4794	3990	5346	6736	7194	7191	7188	7128	8981	9592	9588	9584	9576
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.2/5.5	3.1/7.6	4.1/10.2	5.1/12.9	2.2/5.5	3.1/7.6	4.1/10.2	5.1/12.9	5.5/13.8	5.5/13.8	3.1/7.6	4.1/10.2	5.1/12.9	5.5/13.8	5.5/13.8	5.5/13.8	4.1/10.2	5.1/12.9	5.5/13.8	5.5/13.8	5.5/13.8	5.5/13.8
7	795	1097	1452	1807	1591	2194	2904	3613	4109	4107	3291	4356	5420	6163	6160	6157	5807	7226	8217	8213	8209	8201
	678	-	-	-	1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.1/5.3	2.9/7.3	3.9/9.7	4.8/12.1	2.1/5.3	2.9/7.3	3.9/9.7	4.8/12.1	5.5/13.8	5.5/13.8	2.9/7.3	3.9/9.7	4.8/12.1	5.5/13.8	5.5/13.8	5.5/13.8	3.9/9.7	4.8/12.1	5.5/13.8	5.5/13.8	5.5/13.8	5.5/13.8
8	617	933	1225	1511	1235	1867	2449	3022	3593	3591	2800	3674	4532	5390	5387	5384	4899	6043	7186	7182	7178	7170
	466	-	-	-	931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.9/4.7	2.9/7.1	3.8/9.4	4.6/11.6	1.9/4.7	2.9/7.1	3.8/9.4	4.6/11.6	5.5/13.8	5.5/13.8	2.9/7.1	3.8/9.4	4.6/11.6	5.5/13.8	5.5/13.8	5.5/13.8	3.8/9.4	4.6/11.6	5.5/13.8	5.5/13.8	5.5/13.8	5.5/13.8
9	440	812	1059	1298	880	1624	2117	2596	3083	3190	2436	3176	3894	4624	4785	4782	4235	5192	6166	6380	6376	6368
	333	715	-	-	665	1431	-	-	-	-	2146	-	-	-	-	-	-	-	-	-	-	-
	1.5/3.8	2.8/7.7	3.7/9.1	4.5/11.2	1.5/3.8	2.8/7.7	3.7/9.1	4.5/11.2	5.3/13.3	5.5/13.8	2.8/7.7	3.7/9.1	4.5/11.2	5.3/13.3	5.5/13.8	5.5/13.8	3.7/9.1	4.5/11.2	5.3/13.3	5.5/13.8	5.5/13.8	5.5/13.8
10	324	693	932	1138	648	1386	1864	2275	2689	2869	2079	2797	3413	4033	4304	4301	3729	4550	5378	5738	5734	5726
	246	532	-	-	491	1065	-	-	-	-	1597	-	-	-	-	-	-	-	-	-	-	-
	1.5/3.1	2.7/6.6	3.6/8.9	4.4/10.9	1.5/3.1	2.7/6.6	3.6/8.9	4.4/10.9	5.2/12.9	5.5/13.8	2.7/6.6	3.6/8.9	4.4/10.9	5.2/12.9	5.5/13.8	5.5/13.8	3.6/8.9	4.4/10.9	5.2/12.9	5.5/13.8	5.5/13.8	5.5/13.8
11	245	537	833	1012	489	1073	1665	2024	2384	2607	1610	2498	3037	3576	3910	3907	3330	4049	4767	5213	5209	5201
	186	406	762	-	372	812	1523	-	-	-	1218	2285	-	-	-	-	3046	-	-	-	-	-
	1.5/3	2.3/5.7	3.5/8.8	4.3/10.7	1.5/3	2.3/5.7	3.5/8.8	4.3/10.7	5/12.6	5.5/13.8	2.3/5.7	3.5/8.8	4.3/10.7	5/12.6	5.5/13.8	5.5/13.8	3.5/8.8	4.3/10.7	5/12.6	5.5/13.8	5.5/13.8	5.5/13.8
12	189	417	733	912	378	834	1465	1823	2141	2388	1252	2198	2735	3211	3582	3579	2931	3647	4281	4776	4772	4764
	144	317	597	-	289	633	1194	-	-	-	950	1791	-	-	-	-	2389	-	-	-	-	-
	1.5/3	1.9/4.8	3.4/8.4	4.2/10.5	1.5/3	1.9/4.8	3.4/8.4	4.2/10.5	4.9/12.3	5.5/13.8	1.9/4.8	3.4/8.4	4.2/10.5	4.9/12.3	5.5/13.8	5.5/13.8	3.4/8.4	4.2/10.5	4.9/12.3	5.5/13.8	5.5/13.8	5.5/13.8
13	149	330	623	829	297	660	1247	1658	1942	2203	991	1870	2487	2913	3304	3301	2494	3316	3884	4406	4402	4394
	114	251	476	756	229	503	953	1513	-	-	754	1429	2269	-	-	-	1905	3026	-	-	-	-
	1.5/3	1.7/4.1	3.1/7.8	4.1/10.4	1.5/3	1.7/4.1	3.1/7.8	4.1/10.4	4.8/12.1	5.5/13.8	1.7/4.1	3.1/7.8	4.1/10.4	4.8/12.1	5.5/13.8	5.5/13.8	3.1/7.8	4.1/10.4	4.8/12.1	5.5/13.8	5.5/13.8	5.5/13.8
14	119	265	508	734	238	531	1017	1467	1777	2044	796	1525	2201	2666	3066	3063	2033	2934	3554	4088	4084	4076
	92	203	386	615	184	405	771	1230	-	-	608	1157	1845	-	-	-	1543	2460	-	-	-	-
	1.5/3	1.5/3.6	2.7/6.9	4/9.9	1.5/3	1.5/3.6	2.7/6.9	4/9.9	4.8/12	5.5/13.8	1.5/3.6	2.7/6.9	4/9.9	4.8/12	5.5/13.8	5.5/13.8	2.7/6.9	4/9.9	4.8/12	5.5/13.8	5.5/13.8	5.5/13.8
15	96	216	416	638	193	432	832	1276	1638	1882	649	1248	1914	2456	2823	2857	1664	2552	3275	3763	3809	3801
	75	166	317	506	150	332	633	1013	1473	-	497	950	1519	2210	-	-	1266	2025	2946	-	-	-
	1.5/3	1.5/3.2	2.4/6	3.7/9.2	1.5/3	1.5/3.2	2.4/6	3.7/9.2	4.7/11.8	5.4/13.6	1.5/3.2	2.4/6	3.7/9.2	4.7/11.8	5.4/13.6	5.5/13.8	2.4/6	3.7/9.2	4.7/11.8	5.4/13.6	5.5/13.8	5.5/13.8
16	79	178	344	555	158	356	689	1110	1443	1742	535	1033	1665	2165	2613	2677	1377	2220	2887	3484	3569	3561
	62	137	263	421	124	275	526	843	1230	1707	412	788	1264	1845	2561	-	1051	1686	2460	3415	-	-
	1.5/3	1.5/3	2.1/5.3	3.4/8.6	1.5/3	1.5/3	2.1/5.3	3.4/8.6	4.4/11.1	5.4/13.4	1.5/3	2.1/5.3	3.4/8.6	4.4/11.1	5.4/13.4	5.5/13.8	2.1/5.3	3.4/8.6	4.4/11.1	5.4/13.4	5.5/13.8	5.5/13.8
17	65	148	288	466	131	297	576	931	1277	1597	445	864	1397	1915	2395	2517	1152	1862	2553	3193	3356	3348
	52	115	220	354	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	1.5/3	1.5/3	1.9/4.8	3.1/7.7	1.5/3	1.5/3	1.9/4.8	3.1/7.7	4.2/10.5	5.2/13.1	1.5/3	1.9/4.8	3.1/7.7	4.2/10.5	5.2/13.1	5.5/13.8	1.9/4.8	3.1/7.7	4.2/10.5	5.2/13.1	5.5/13.8	5.5/13.8
18	55	125	243	394	109	249	486	788	1137	1422	374	729	1182	1705	2133	2376	972	1576	2274	2845	3168	3160
	44	97	187	301	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	1.5/3	1.5/3	1.7/4.3	2.8/6.9	1.5/3	1.5/3	1.7/4.3	2.8/6.9	4/9.9	4.9/12.3	1.5/3	1.7/4.3	2.8/6.9	4/9.9	4.9/12.3	5.5/13.8	1.7/4.3	2.8/6.9	4/9.9	4.9/12.3	5.5/13.8	5.5/13.8
19	46	106	207	336	92	211	413	672	991	1275	317	620	1008	1487	1912	2249	827	1344	1983	2549	2999	2991
	37	83	160	257	74	166	319	515	756	1056	249	479	772	1133	1584	2130	638	1029	1511	2112	2839	-
	1.5/3	1.5/3	1.5/3.8	2.5/6.2	1.5/3	1.5/3	1.5/3.8	2.5/6.2	3.6/9.1	4.7/11.7	1.5/3	1.5/3.8	2.5/6.2	3.6/9.1	4.7/11.7	5.5/13.8	1.5/3.8	2.5/6.2	3.6/9.1	4.7/11.7	5.5/13.8	5.5/13.8
20	39	90	177	289	78	180	354	577	854	1149	270	531	866	1280	1723	2105	708	1155	1707	2297	2807	2839
	32	71	137	222	64	142	275	444	652	913	214	412	666	979	1370	1845	549	887	1305	1827	2460	-
	1.5/3	1.5/3	1.5/3.5	2.3/5.6	1.5/3	1.5/3	1.5/3.5	2.3/5.6	3.3/8.3	4.4/11.1	1.5/3	1.5/3.5	2.3/5.6	3.3/8.3	4.4/11.1	5.4/13.6	1.5/3.5	2.3/5.6	3.3/8.3	4.4/11.1	5.4/13.6	5.5/13.8
22	67	132	217	344	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	54	104	168	268	80	178	336	536	806	1096	250	480	730	1080	1430	1880	730	1180	1630	2080	2530	2576
	1.5/3	1.5/3	1.9/4.7	3.1/7.7	1.5/3	1.5/3	1.9/4.7	3.1/7.7	4.2/10.5	5.2/13.1	1.5/3	1.9/4.7	3.1/7.7	4.2/10.5	5.2/13.1	5.5/13.8	1.9/4.7	3.1/7.7	4.2/10.5	5.2/13.1	5.5/13.8	5.5/13.8
24	51	101	167	242	74	166	319	515	756	1056	249	479	772	1133	1584	2130	638	1029	1511	2112	2839	-
	42	80	130	207	64																	

Closest Allowable Nail Spacing									
Nail Size		Nailing Parallel to Glue Lines (Narrow Face) ¹						Nailing Perpendicular to Glue Lines (Wide Face)	
		Versa-Lam® LVL						All Versa-Lam® LVL Products	
		1½"		1¾"		3½" and wider			
O.C.	End	O.C.	End	O.C.	End	O.C.	End		
8d Box (0.113"ø x 2.5")	3"	1½"	2"	2"	1"	2"	½"	2"	½"
8d Common (0.131"ø x 2.5")	3"	2"	3"	2"	2"	2"	1"	2"	1"
10d & 12d Box (0.128"ø x 3", 3.25")	3"	2"	3"	2"	2"	2"	1"	2"	1"
16d Box (0.135"ø x 3.5")	3"	2"	3"	2"	2"	2"	1"	2"	1"
10d & 12d Common & 16d Sinkers (0.148"ø x 3", 3.25")	4"	3"	4"	3"	2"	2"	2"	2"	2"
16d Common (0.162"ø x 3.5")	6"	4"	6"	3"	2"	2"	2"	2"	2"



- (1) For 1¾" thickness and greater, two rows of nails (such as for a metal strap) are allowed (use ½" minimum offset between rows and stagger nails).
- Offset and stagger nail rows from floor sheathing and wall sole plate.
 - Simpson Strong-Tie A35 and LPT4 connectors may be attached to the side of Versa-Lam® LVL. Use nails as specified by Simpson Strong-Tie.

Versa-Lam® LVL Design Values

Grade	Width	Depth	Weight (lb/ft)	Allowable Shear (lb)	Allowable Moment (ft-lb)	Moment of Inertia (in ⁴)		
Versa-Strud® 1.8E 2650	1½"	3½"	1.5	998	776	5.4		
		5½"	2.4	1,568	1,821	20.8		
		7½"	3.2	2,066	3,069	47.6		
Versa-Lam® LVL 2.1E 3100	1¾"	3½"	1.8	1,164	1,058	6.3		
		5½"	2.8	1,829	2,486	24.3		
		7½"	3.7	2,411	4,189	55.6		
		9½"	4.7	3,076	6,636	115.4		
		9½"	4.8	3,159	6,979	125.0		
		11½"	5.7	3,741	9,605	207.6		
		11½"	6.0	3,948	10,638	244.2		
		14"	7.1	4,655	14,517	400.2		
		16"	8.1	5,320	18,682	597.3		
		18"	9.1	5,985	23,337	850.5		
		24"	12.2	7,980	40,183	2016.0		
		Versa-Lam® LVL 2.1E 3100	3½"	5½"	5.6	3,658	4,971	48.5
				7½"	7.4	4,821	8,377	111.1
				9½"	9.4	6,151	13,272	230.8
9½"	9.6			6,318	13,958	250.1		
11½"	11.4			7,481	19,210	415.3		
11½"	12.1			7,897	21,275	488.4		
14"	14.2			9,310	29,035	800.3		
16"	16.2			10,640	37,364	1194.7		
18"	18.3			11,970	46,674	1701.0		
20"	20.3			13,300	56,952	2333.3		
Versa-Lam® LVL 2.1E 3100	5¼"			5½"	8.0	5,237	6,830	63.3
				5½"	8.4	5,486	7,157	72.8
				7½"	11.0	7,232	12,566	166.7
				9½"	14.1	9,227	19,908	345.3
		9½"	14.5	9,475	20,937	375.1		
		11½"	17.1	11,222	28,814	622.9		
		11½"	18.1	11,845	31,513	732.6		
		14"	21.3	13,965	43,552	1200.5		
		16"	24.4	15,960	56,045	1792.0		
		18"	27.4	17,915	70,011	2551.5		
		20"	30.4	19,950	85,428	3500.0		
		24"	36.5	23,940	120,549	6048.0		
		Versa-Lam® LVL 2.1E 3100	7"	9½"	16.6	12,303	26,544	461.7
				9½"	17.1	12,635	27,916	500.1
				11½"	20.2	14,963	38,419	830.6
				11½"	21.4	15,794	42,550	976.8
				14"	25.2	18,620	58,069	1600.7
				16"	28.8	21,280	74,728	2389.3
				18"	32.4	23,940	93,348	3402.0
				20"	36.0	26,600	113,904	4666.7
				24"	43.2	31,920	160,732	8064.0

Versa-Lam® LVL Allowable Stress Values

Design Property	Grade	Modulus of Elasticity True (Shear-Free) E _T (x 10 ⁶ psi) ⁽¹⁾⁽⁷⁾	Modulus of Elasticity Parallel E _∥ (x 10 ⁶ psi) ⁽¹⁾	Modulus of Elasticity for Stability E _{cr} (x 10 ³ psi) ⁽²⁾⁽⁸⁾	Bonding F _b (psi) ⁽²⁾⁽³⁾	Horizontal Shear F _v (psi) ⁽²⁾⁽⁴⁾	Tension Parallel to Grain F _t (psi) ⁽²⁾⁽⁵⁾	Compression Parallel to Grain F _{c∥} (psi) ⁽²⁾	Compression Perpendicular to Grain F _{c⊥} (psi) ⁽¹⁾⁽⁶⁾	Equivalent Specific Gravity or Fastener Design (S _g)
Versa-Lam® LVL Beams	2.1E 3100	2.1	2.1	1.1	3100	285	1650	3000	750	0.5
Versa-Lam® LVL Studs	1.8E 2650	1.8	1.8	0.9	2650	285	1650	3000	750	0.5
Versa-Lam® LVL Columns	1.8E 2650	1.8	1.7	0.9	2650	285	1650	3000	750	0.5

- (1) Value cannot be adjusted for load duration.
- (2) Value is based on 100% load duration and may be adjusted for other load durations.
- (3) Fiber stress bending value shall be multiplied by the depth factor, (12/d)^{1/3} where d = member depth [in].
- (4) Stress applied perpendicular to the glue lines.
- (5) Tension value shall be multiplied by a length factor, (4/L)^{1/3} where L = member length [ft]. Use L = 4 for members less than four feet long.
- (6) Stress applied parallel to the glue lines.
- (7) True or shear free modulus of elasticity does not account for shear deformation.
- (8) E_{cr} is the reference modulus of elasticity for beam and column stability calculations. It is calculated using E_{∥,ref} in accordance with Appendix D of the 2018 NDS. When calculating E_{cr}, the coefficient of modulus of elasticity, COV_E, may be taken as 0.10, and the adjustment factor to convert E to a pure bending basis may be taken as 1.05.
- Design properties are limited to dry conditions of use where the maximum moisture content of the material will not exceed 16%.

Column Length	Allowable Axial Load (lb)														
	3 1/2" x 3 1/2"			3 1/2" x 4 3/8"			3 1/2" x 5 1/4"			3 1/2" x 5 1/2"			3 1/2" x 7"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
4'	14,700	16,090	16,930	18,390	20,130	21,180	22,070	24,165	25,430	23,130	25,320	26,640	29,450	32,240	33,920
5'	12,270	13,150	13,660	15,350	16,440	17,090	18,425	19,740	20,515	19,300	20,680	21,490	24,580	26,330	27,365
6'	10,080	10,650	10,980	12,610	13,320	13,740	15,140	15,995	16,495	15,860	16,750	17,280	20,195	21,335	22,000
7'	8,310	8,705	8,930	10,400	10,890	11,170	12,480	13,075	13,415	13,080	13,700	14,050	16,650	17,435	17,890
8'	6,930	7,205	7,370	8,660	9,010	9,210	10,405	10,825	11,070	10,900	11,340	11,600	13,880	14,440	14,760
9'	5,840	6,050	6,160	7,300	7,560	7,710	8,770	9,080	9,260	9,190	9,510	9,700	11,700	12,115	12,350
10'	4,980	5,135	5,225	6,230	6,420	6,540	7,480	7,715	7,850	7,830	8,080	8,220	9,975	10,290	10,470
11'	4,290	4,410	4,480	5,360	5,520	5,600	6,445	6,625	6,730	6,750	6,940	7,050	8,595	8,835	8,975
12'	3,730	3,825	3,880	4,660	4,780	4,850	5,600	5,745	5,830	5,870	6,020	6,100	7,475	7,665	7,775
13'	3,270	3,350	3,390	4,090	4,190	4,240	4,915	5,030	5,095	5,150	5,270	5,340	6,555	6,710	6,795
14'	2,890	2,950	2,990	3,610	3,690	3,740	4,340	4,435	4,490	4,550	4,650	4,700	5,790	5,915	5,990
Column Length	3 1/2" x 7 1/4"			5 1/4" x 5 1/4"			5 1/4" x 5 1/2"			5 1/4" x 7"			5 1/4" x 7 1/4"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
	4'	30,500	33,390	35,130											
5'	25,460	27,270	28,340												
6'	20,910	22,090	22,780	33,070	36,220	38,110	34,670	37,950	39,930						
7'	17,250	18,060	18,530	29,420	31,730	33,085	30,830	33,240	34,660						
8'	14,370	14,960	15,290	25,875	27,570	28,565	27,110	28,880	29,930	34,525	36,790	38,115	35,760	38,090	39,480
9'	12,120	12,540	12,790	22,690	23,970	24,715	23,770	25,110	25,900	30,275	31,985	32,980	31,360	33,130	34,160
10'	10,330	10,660	10,840	19,930	20,920	21,495	20,880	21,920	22,520	26,600	27,920	28,685	27,550	28,920	29,710
11'	8,900	9,150	9,300	17,585	18,375	18,820	18,420	19,250	19,720	23,465	24,510	25,125	24,310	25,400	26,010
12'	7,740	7,940	8,050	15,590	16,220	16,585	16,340	16,990	17,380	20,805	21,650	22,130	21,550	22,420	22,930
13'	6,790	6,950	7,040	13,895	14,410	14,700	14,560	15,100	15,400	18,545	19,225	19,620	19,210	19,920	20,320
14'	6,000	6,130	6,200	12,450	12,870	13,115	13,040	13,480	13,740	16,615	17,180	17,500	17,210	17,790	18,130
15'				11,210	11,560	11,760	11,740	12,110	12,320	14,960	15,425	15,695	15,490	15,980	16,260
16'				10,135	10,430	10,600	10,620	10,930	11,110	13,525	13,920	14,150	14,010	14,420	14,650
17'				9,205	9,455	9,600	9,650	9,910	10,060	12,285	12,620	12,810	12,730	13,070	13,270
18'				8,395	8,610	8,735	8,800	9,020	9,150	11,205	11,495	11,655	11,610	11,900	12,070
19'				7,685	7,870	7,975	8,050	8,250	8,360	10,260	10,505	10,645	10,620	10,880	11,030
20'				7,060	7,220	7,310	7,400	7,560	7,660	9,420	9,635	9,760	9,760	9,980	10,110
21'				6,505	6,645	6,725	6,820	6,960	7,050	8,680	8,870	8,980	8,990	9,190	9,300

- Table assumes that the column is braced at column ends only. Effective column length is equal to actual column length.
- Allowable loads are based upon one-piece (solid) column members used in dry service conditions. BC Calc® software may be used for multi-piece column design.
- Allowable loads are based on an eccentricity value equal to 0.167 multiplied by either the column thickness or width (worst case).
- Allowable loads are based on axially loaded columns using the design provisions of the 2018 National Design Specification (NDS) for Wood Construction. Table capacity values based upon a buckling length coefficient, (K_e) equal to 1.0 (rotation free,

translation fixed at each column end per NDS Appendix G). A K_e coefficient of 1.0 conservatively models typical wood column applications. For other end fixity conditions, contact Boise Cascade EWP Engineering. For side or other combined bending and axial loads, see provisions in 2018 NDS.

- Load values are not shown for short lengths due to loads exceeding common connector capacities. Load values are not shown for longer lengths if the controlling slenderness ratio exceeds 50 (per NDS).
- Lateral loads (wind loading) are not considered in this table. BC Calc® software may be used for out-of-plane lateral load column application design.

Versa-Stud® LVL 1.8E 2650

Reference Design Values					
Product	Bending F _b (psi)	Compression Parallel to Grain F _c (psi)	Compression Perp. to Grain F _{c⊥} (psi)	Modulus of Elasticity - Apparent E (psi)	Horizontal Shear F _v (psi)
Versa-Stud® 1.8E 2650 1 1/2" x 5 1/2"	2865	3000	450	1,700,000	285
Spruce Pine Fir (North) # 1 / 2 Grade 2 x 6	1138	1150	425	1,400,000	135
Hem-Fir # 2 Grade 2 x 6	1105	1300	405	1,300,000	150
Western Woods # 2 Grade 2 x 6	878	900	335	1,000,000	135

- Design values are for loads applied to the narrow face of the studs.
- Dimension lumber values per NDS Supplement, Design Values for Wood Construction, 2018 Edition.
- Repetitive member factors have not been applied to the bending values. Depth (size) factors per ICC-ES®/APA® ESR-1040 and 2018 NDS have been applied to the corresponding bending values.

For additional design information, please see the Versa-Stud® Erection Tall Wall Guide.



INTEGRATED SOFTWARE FOR EASY SPECIFICATION

All Boise Cascade's engineered wood products are incorporated into Boise Cascade's software suite. BC Framer®, BC Connect®, BC Calc®, and SawTek® all work together, seamlessly integrating design and processing technology into one automated system.

SOFTWARE BENEFITS

- ▶ Design member by member in BC Calc, or create a complete 3D model in BC Framer
- ▶ Dealers can manage projects and material lists and optimize manual or automated saw cut patterns in BC Connect
- ▶ SawTek's processing software cuts, drills, and labels job packs according to your specifications

With Boise Cascade's software suite, there's no need to worry about missing pieces or manual entry errors. The software applications share data digitally, ensuring nothing gets lost or mistyped.



Single Joist - Top Flange						Single Joist - Face Mount						Face Mount Skewed 45° Joist Hanger					
ITS						IUS						SUR/L					
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist					Header	Joist					Header	Joist
9½"	4500s	ITS1.81/9.5	993	6-10d	-	9½"	4500s	IUS1.81/9.5	950	8-10d	-	9½"	4500s	SUR/L1.81/9	1081	12-16d	2-10dx1½"
	5000s	ITS2.06/9.5	993	6-10d	-		5000s	IUS2.06/9.5	950	8-10d	-		5000s	SUR/L2.06/9	1097	14-16d	2-10dx1½"
	6000s	ITS2.7/9.5	1225	6-10d	-		6000s	IUS2.37/9.5	950	8-10d	-		6000s	SUR/L2.37/9	1343	14-16d	2-10dx1½"
	6500s	ITS2.56/9.5	1225	6-10d	-		6500s	IUS2.56/9.5	950	8-10d	-		6500s	SUR/L2.56/9	1343	14-16d	2-10dx1½"
	4500s	ITS1.81/11.88	1068	6-10d	-		11½"	4500s	IUS1.81/11.88	1185	10-10d		-	11½"	4500s	SUR/L1.81/11	1306
5000s	ITS2.06/11.88	1068	6-10d	-	5000s	IUS2.06/11.88		1185	10-10d	-	5000s	SUR/L2.06/11	1350		16-16d	2-10dx1½"	
6000s	ITS2.7/11.88	1225	6-10d	-	6000s	IUS2.37/11.88		1185	10-10d	-	6000s	SUR/L2.37/11	1385		16-16d	2-10dx1½"	
6500s	ITS2.56/11.88	1225	6-10d	-	6500s	IUS2.56/11.88		1185	10-10d	-	6500s	SUR/L2.56/11	1385		16-16d	2-10dx1½"	
90s	ITS3.56/11.88	1518	6-10d	-	90s	IUS3.56/11.88		1420	12-10d	-	90s	SUR/L3.56/11	1906		14-16d	2-10dx1½"	
11"	4500s	ITS1.81/14	1075	6-10d	-	14"	4500s	IUS1.81/14	1420	12-10d	-	14"	4500s	SUR/L1.81/14	1675	20-16d	2-10dx1½"
	5000s	ITS2.06/14	1081	6-10d	-		5000s	IUS2.06/14	1420	12-10d	-		5000s	SUR/L2.06/14	1693	18-16d	2-10dx1½"
	6000s	ITS2.7/14	1252	6-10d	-		6000s	IUS2.37/14	1420	12-10d	-		6000s	SUR/L2.37/14	1693	18-16d	2-10dx1½"
	6500s	ITS2.56/14	1252	6-10d	-		6500s	IUS2.56/14	1420	12-10d	-		6500s	SUR/L2.56/14	1693	18-16d	2-10dx1½"
	90s	ITS3.56/14	1520	6-10d	-		90s	IUS3.56/14	1420	12-10d	-		90s	SUR/L3.56/14	2050	18-16d	2-10dx1½"
16"	4500s	ITS1.81/16	1081	6-10d	-	16"	4500s	IUS1.81/16	1660	14-10d	-	16"	4500s	SUR/L1.81/16	1887	20-16d	2-10dx1½"
	5000s	ITS2.06/16	1087	6-10d	-		5000s	IUS2.06/16	1660	14-10d	-		5000s	SUR/L2.06/16	1920	18-16d	2-10dx1½"
	6000s	ITS2.7/16	1288	6-10d	-		6000s	IUS2.37/16	1660	14-10d	-		6000s	SUR/L2.37/16	1920	18-16d	2-10dx1½"
	6500s	ITS2.56/16	1288	6-10d	-		6500s	IUS2.56/16	1660	14-10d	-		6500s	SUR/L2.56/16	1920	18-16d	2-10dx1½"
	90s	ITS3.56/16	1520	6-10d	-		90s	IUS3.56/16	1660	14-10d	-		90s	SUR/L3.56/16	2250	18-16d	2-10dx1½"

Double Joist - Top Flange						Double Joist - Face Mount						Field Slope and Skew Joist Hanger					
MIT						U/HU						LSSR					
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist					Header	Joist					Header	Joist
9½"	4500s	MIT49.5	2305	8-16d	2-10dx1½"	9½"	4500s	MIU3.56/9	2305	16-16d	2-10dx1½"	9½"	4500s	LSSR1.81Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	5000s	MIT4.12/L5	2305	8-16d	2-10dx1½"		5000s	MIU4.12/C	2305	16-16d	2-10dx1½"		5000s	LSSR2.1Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	6000s	MIT359.3-2	2305	8-16d	2-10dx1½"		6000s	MIU4.75/9	2305	16-16d	2-10dx1½"		6000s	LSSR2.4Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	6500s	MIT31.5-2	2305	8-16d	2-10dx1½"		6500s	MIU5.12/9	2305	16-16d	2-10dx1½"		6500s	LSSR2.56Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	4500s	MIT411.88	2305	8-16d	2-10dx1½"		11½"	4500s	MIU3.56/11	2880	20-16d		2-10dx1½"	11½"	4500s	LSSR1.81Z	1205
5000s	MIT4.12/11.88	2305	8-16d	2-10dx1½"	5000s	MIU4.12/11		2880	20-16d	2-10dx1½"	5000s	LSSR2.1Z	1205		13-0.148 x 2½"	9-0.148 x 1½"	
6000s	MIT511.88-2	2305	8-16d	2-10dx1½"	6000s	MIU4.75/11		2880	20-16d	2-10dx1½"	6000s	LSSR2.5Z	1205		13-0.148 x 2½"	9-0.148 x 1½"	
6500s	MIT311.88-2	2305	8-16d	2-10dx1½"	6500s	MIU5.12/11		2880	20-16d	2-10dx1½"	6500s	LSSR2.56Z	1205		13-0.148 x 2½"	9-0.148 x 1½"	
90s	MIT3511.88-2	2305	8-16d	2-10dx1½"	90s	MIU4.75/11		2600	20-16d	2-10dx1½"	90s	LSSR2.3Z	1205		13-0.148 x 2½"	9-0.148 x 1½"	
14"	4500s	MIT414	2305	8-16d	2-10dx1½"	14"	4500s	MIU3.56/14	3170	22-16d	2-10dx1½"	14"	4500s	LSSR410Z	1810	20-0.162 x 2½"	13-0.162 x 2½"
	5000s	MIT4.12/14	2305	8-16d	2-10dx1½"		5000s	MIU4.12/14	3170	22-16d	2-10dx1½"		5000s	LSSR1.81Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	6000s	MIT3514-2	2305	8-16d	2-10dx1½"		6000s	MIU4.75/14	3170	22-16d	2-10dx1½"		6000s	LSSR2.1Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	6500s	MIT314-2	2305	8-16d	2-10dx1½"		6500s	MIU5.12/14	3170	22-16d	2-10dx1½"		6500s	LSSR2.3Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	90s	MIT3514-2	2305	8-16d	2-10dx1½"		90s	MIU4.75/14	2700	22-16d	2-10dx1½"		90s	LSSR2.56Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
16"	4500s	MIT416	2305	8-16d	2-10dx1½"	16"	4500s	MIU3.56/16	3455	24-16d	2-10dx1½"	16"	4500s	LSSR2.3Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	5000s	LB74.12/16	2460	10-16d	2-10dx1½"		5000s	MIU4.12/16	3455	24-16d	2-10dx1½"		5000s	LSSR2.56Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	6000s	MIT4.75/16	2305	8-16d	2-10dx1½"		6000s	MIU4.75/16	3455	24-16d	2-10dx1½"		6000s	LSSR2.3Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	6500s	MIT5.12/16	2305	8-16d	2-10dx1½"		6500s	MIU5.12/16	3455	24-16d	2-10dx1½"		6500s	LSSR2.56Z	1205	13-0.148 x 2½"	9-0.148 x 1½"
	90s	MIT4.75/16	2305	8-16d	2-10dx1½"		90s	MIU4.75/16	2725	24-16d	2-10dx1½"		90s	LSSR410Z	1810	20-0.162 x 2½"	13-0.162 x 2½"


Adjustable Height Joist Hanger						Variable Pitch Joist Connector					
THAI						VPA					
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Fastener	
				Header	Joist					Top Plate	Rafter
9½"	4500s	THAI1.81/22	1181	6-10d	2-10dx1½"	9½"	4500s	LSSUI25	995	9-10d	7-10dx1½"
	5000s	THAI2.06/22	1181	6-10d	2-10dx1½"		5000s	LSSUI25	995	9-10d	7-10dx1½"
	6000s	THAI3522	1393	6-10d	2-10dx1½"		6000s	LSSUI35	995	9-10d	7-10dx1½"
	6500s	THAI322	1393	6-10d	2-10dx1½"		6500s	LSSUH310	1425	14-10d	7-10dx1½"
	4500s	THAI1.81/22	1443	6-10d	2-10dx1½"		11½"	4500s	LSSUI25	995	9-10d
5000s	THAI2.06/22	1443	6-10d	2-10dx1½"	5000s	LSSUI25		995	9-10d	7-10dx1½"	
6000s	THAI3522	1443	6-10d	2-10dx1½"	6000s	LSSUI35		995	9-10d	7-10dx1½"	
6500s	THAI322	1443	6-10d	2-10dx1½"	6500s	LSSUH310		1475	14-10d	7-10dx1½"	
90s	THAI3522	1443	6-10d	2-10dx1½"	90s	LSSUI35		995	9-10d	7-10dx1½"	
14"	4500s	THAI1.81/22	1600	6-10d	2-10dx1½"	14"	4500s	LSSUI25	995	9-10d	7-10dx1½"
	5000s	THAI2.06/22	1600	6-10d	2-10dx1½"		5000s	LSSUI25	995	9-10d	7-10dx1½"
	6000s	THAI3522	1600	6-10d	2-10dx1½"		6000s	LSSUI35	995	9-10d	7-10dx1½"
	6500s	THAI322	1600	6-10d	2-10dx1½"		6500s	LSSUH310	1600	14-10d	7-10dx1½"
	90s	THAI3522	1600	6-10d	2-10dx1½"		90s	LSSUI35	995	9-10d	7-10dx1½"

SIMPSON
Strong-Tie®
CONNECTORS

For more information, contact Simpson Strong-Tie at 1-800-999-5059 or s.strong-tie.com

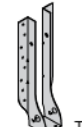
- General Notes**
- **Capacity values** vary with different nailing criteria and/or support conditions. Contact supplier or Simpson Strong-Tie for further information.
 - Capacity values shown are either hanger capacity values (see support requirements below), or BCI joist end reaction capacities — whichever is less.
 - All capacity values are downward loads at 100% load duration.
 - Use sloped steel hangers and beveled web stiffeners when BCI joist slope exceeds ¼" per foot.
 - Leave ½" clearance (½" maximum) between the end of the supported joist and the head of the hanger.
 - At max. design capacity shown, hangers may exceed standard ¼" deflection by ½".
 - For VPA hanger the two 10d x 1½" joist nails must be installed through the bend tabs at approximately a 45-degree angle.
- Support Requirements**
- Support must be vertical and to be Boise Cascade structural composite lumber (Douglas fir or southern pine species).
 - Minimum support width for single and double joist top mount hangers is 3".
 - Minimum support width for face mount hangers with 10d and 16d nails is 3/4" and 1", respectively.

Single Joist - Top Flange



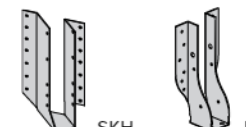
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	THO17950	993	(6) 10d	(2) 10dx1 1/2"
	5000s	TFL2095	993	(6) 10d	(2) 10dx1 1/2"
	6000s	TFL2395	1225	(6) 10d	(2) 10dx1 1/2"
	6500s	TFL2595	1225	(6) 10d	(2) 10dx1 1/2"
11 1/2"	4500s	THO17118	1068	(6) 10d	(2) 10dx1 1/2"
	5000s	TFL20118	1068	(6) 10d	(2) 10dx1 1/2"
	6000s	TFL23118	1237	(6) 10d	(2) 10dx1 1/2"
	6500s	TFL25118	1237	(6) 10d	(2) 10dx1 1/2"
14"	4500s	THO35118	1589	(10) 10d	(2) 10dx1 1/2"
	5000s	TFL1714	1075	(6) 10d	(2) 10dx1 1/2"
	6000s	TFL2014	1081	(6) 10d	(2) 10dx1 1/2"
	6500s	TFL2314	1262	(6) 10d	(2) 10dx1 1/2"
16"	4500s	THO35160	1660	(12) 10d	(2) 10dx1 1/2"
	5000s	TFL1716	1081	(6) 10d	(2) 10dx1 1/2"
	6000s	TFL2016	1087	(6) 10d	(2) 10dx1 1/2"
	6500s	TFL2316	1268	(6) 10d	(2) 10dx1 1/2"

Single Joist - Face Mount



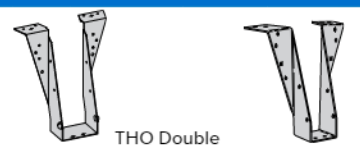
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	IHFL17925	960	(8) 10d	---
	5000s	IHFL20925	960	(8) 10d	---
	6000s	IHFL23925	960	(8) 10d	---
	6500s	IHF26925	1250	(10) 10d	(2) 10dx1 1/2"
11 1/2"	4500s	IHFL17112	1187	(10) 10d	---
	5000s	IHFL20112	1187	(10) 10d	---
	6000s	IHFL23112	1200	(10) 10d	---
	6500s	IHF26112	1250	(10) 10d	(2) 10dx1 1/2"
14"	4500s	IHFL1714	1212	(12) 10d	---
	5000s	IHFL2014	1212	(12) 10d	---
	6000s	IHFL2314	1350	(12) 10d	---
	6500s	IHF2614	1350	(12) 10d	(2) 10dx1 1/2"
16"	4500s	IHFL1714	1440	(14) 10d	---
	5000s	IHFL2016	1225	(14) 10d	---
	6000s	IHF2316	1362	(14) 10d	---
	6500s	IHF2616	1362	(14) 10d	(2) 10dx1 1/2"

Face Mount Skewed 45° Joist Hanger



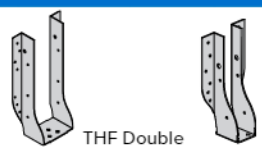
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	SKH1720L/R	1153	(14) 10d	(10) 10dx1 1/2"
	5000s	SKH2020L/R	1153	(14) 10d	(10) 10dx1 1/2"
	6000s	SKH2320L/R	1384	(14) 10d	(10) 10dx1 1/2"
	6500s	SKH2520L/R	1384	(14) 10d	(10) 10dx1 1/2"
11 1/2"	4500s	SKH1720L/R	1434	(14) 10d	(10) 10dx1 1/2"
	5000s	SKH2020L/R	1434	(14) 10d	(10) 10dx1 1/2"
	6000s	SKH2320L/R	1434	(14) 10d	(10) 10dx1 1/2"
	6500s	SKH2520L/R	1434	(14) 10d	(10) 10dx1 1/2"
14"	4500s	SKH410L/R	1900	(16) 16d	(10) 16d
	5000s	SKH1724L/R	1562	(16) 10d	(10) 10dx1 1/2"
	6000s	SKH2024L/R	1562	(16) 10d	(10) 10dx1 1/2"
	6500s	SKH2324L/R	1562	(16) 10d	(10) 10dx1 1/2"
16"	4500s	SKH1724L/R	2050	(22) 16d	(10) 16d
	5000s	SKH1741L/R	1690	(16) 10d	(10) 10dx1 1/2"
	6000s	SKH2024L/R	1562	(16) 10d	(10) 10dx1 1/2"
	6500s	SKH2324L/R	1562	(16) 10d	(10) 10dx1 1/2"

Double Joist - Top Flange



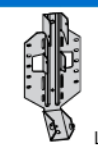
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	THO35950	2050	(10) 10d	(2) 10dx1 1/2"
	5000s	THO20950-2	2330	(10) 16d	(6) 10d
	6000s	THO23950-2	2825	(10) 16d	(6) 10d
	6500s	THO25950-2	2825	(10) 16d	(6) 10d
11 1/2"	4500s	THO35118	2050	(10) 10d	(2) 10dx1 1/2"
	5000s	THO20118-2	2330	(10) 16d	(6) 10d
	6000s	THO23118-2	2925	(10) 16d	(6) 10d
	6500s	THO25118-2	2925	(10) 16d	(6) 10d
14"	4500s	THO35140	2315	(12) 10d	(2) 10dx1 1/2"
	5000s	THO20140-2	2330	(10) 16d	(6) 10d
	6000s	THO23140-2	3350	(12) 16d	(6) 10d
	6500s	THO25140-2	3350	(12) 16d	(6) 10d
16"	4500s	THO35160	2359	(12) 10d	(2) 10dx1 1/2"
	5000s	THO20160-2	2330	(10) 16d	(6) 10d
	6000s	THO23160-2	3137	(12) 16d	(6) 10d
	6500s	THO25160-2	3137	(12) 16d	(6) 10d

Double Joist - Face Mount




Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	IHF135925	1200	(10) 10d	---
	5000s	IHF20925-2	1250	(10) 10d	(2) 10dx1 1/2"
	6000s	IHF23925-2	1250	(10) 10d	(2) 10dx1 1/2"
	6500s	IHF25925-2	1250	(10) 10d	(2) 10dx1 1/2"
11 1/2"	4500s	IHF135112	1200	(10) 10d	---
	5000s	IHF20112-2	1250	(10) 10d	(2) 10dx1 1/2"
	6000s	IHF23118-2	1890	(16) 10d	(6) 10d
	6500s	IHF25118-2	1890	(16) 10d	(6) 10d
14"	4500s	IHF135112	1440	(12) 10d	---
	5000s	IHF2014-2	1500	(12) 10d	(2) 10dx1 1/2"
	6000s	IHF23140-2	2660	(20) 10d	(6) 10d
	6500s	IHF25140-2	2660	(20) 10d	(6) 10d
16"	4500s	IHF13516	1680	(22) 10d	(2) 10dx1 1/2"
	5000s	---	---	---	---
	6000s	IHF23160-2	3175	(24) 10d	(6) 10d
	6500s	IHF25160-2	3175	(24) 10d	(6) 10d

Field Slope and Skew Joist Hanger




Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1 1/2"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1 1/2"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1 1/2"
	6500s	LSSH25	1412	(14) 16d	(12) 10dx1 1/2"
11 1/2"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1 1/2"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1 1/2"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1 1/2"
	6500s	LSSH25	1462	(14) 16d	(12) 10dx1 1/2"
14"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1 1/2"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1 1/2"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1 1/2"
	6500s	LSSH25	1610	(14) 16d	(12) 10dx1 1/2"
16"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1 1/2"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1 1/2"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1 1/2"
	6500s	LSSH25	1610	(14) 16d	(12) 10dx1 1/2"

Adjustable Height Joist Hanger (Single)



Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist
9 1/2"	4500s	MSH1722 (9)	1143	(6) 10d	(4) 10dx1 1/2"
	5000s	MSH2022 (9)	1143	(6) 10d	(4) 10d
	6000s	MSH2322 (9)	1381	(6) 10d	(4) 10dx1 1/2"
	6500s	MSH322 (9)	1381	(6) 10d	(4) 10dx1 1/2"
11 1/2"	4500s	MSH1722	1431	(6) 10d	(4) 10dx1 1/2"
	5000s	MSH2022	1431	(6) 10d	(4) 10d
	6000s	MSH2322	1431	(6) 10d	(4) 10dx1 1/2"
	6500s	MSH322	1431	(6) 10d	(4) 10dx1 1/2"
14"	4500s	MSH1722	1550	(6) 10d	(4) 10dx1 1/2"
	5000s	MSH2022	1550	(6) 10d	(4) 10d
	6000s	MSH2322	1550	(6) 10d	(4) 10dx1 1/2"
	6500s	MSH322	1550	(6) 10d	(4) 10dx1 1/2"
16"	4500s	MSH1722	1668	(6) 10d	(4) 10dx1 1/2"
	5000s	MSH2022	1668	(6) 10d	(4) 10d
	6000s	MSH2322	1668	(6) 10d	(4) 10dx1 1/2"
	6500s	MSH322	1668	(6) 10d	(4) 10dx1 1/2"

Variable Pitch Joist Connector



Joist Depth	BCI®	Hanger	Capacity [lbs]	Fastener	
				Top Plate	Rafter
9 1/2"	4500s	TM 175	1125	(6) 10d	(4) 10dx1 1/2"
	5000s	TMP21	1125	(6) 10d	(4) 10dx1 1/2"
	6000s	TMP23	1375	(6) 10d	(4) 10dx1 1/2"
	6500s	TMP25	1375	(6) 10d	(4) 10dx1 1/2"
11 1/2"	4500s	TM175	1425	(6) 10d	(4) 10dx1 1/2"
	5000s	TMP21	1425	(6) 10d	(4) 10dx1 1/2"
	6000s	TMP23	1425	(6) 10d	(4) 10dx1 1/2"
	6500s	TMP25	1425	(6) 10d	(4) 10dx1 1/2"
14"	4500s	TM175	1450	(6) 10d	(4) 10dx1 1/2"
	5000s	TMP21	1475	(6) 10d	(4) 10dx1 1/2"
	6000s	TMP23	1525	(6) 10d	(4) 10dx1 1/2"
	6500s	TMP25	1525	(6) 10d	(4) 10dx1 1/2"
16"	4500s	TM175	1450	(6) 10d	(4) 10dx1 1/2"
	5000s	TMP21	1500	(6) 10d	(4) 10dx1 1/2"
	6000s	TMP23	1550	(6) 10d	(4) 10dx1 1/2"
	6500s	TMP25	1550	(6) 10d	(4) 10dx1 1/2"

MiTek For more information, contact MiTek Structural Connectors at 1-800-28-5934 or MiTek-US.com

General Notes

- **Capacity values shown are either hanger capacity values (see support requirements below), or BCI® joist end reaction capacities - whichever is less.**
- All capacity values are downward loads at 100% load duration.
- Use sloped seat hangers and beveled web stiffeners when BCI® joist slope exceeds 1/4" per foot.
- Leave 1/8" clearance (1/8" max) between the end of the supported joist and the head of the hanger.
- For BCI® joist applications, consult MiTek for capacity reduction.
- Flanges on the back of hanger may extend above top of joist.

Support Requirements:

- Support member assumed to be **Grade structural composite lumber or sawn lumber (Douglas fir or southern pine species)**
- Minimum support width for single and double-joist top mount hangers is 5" (1/2" for THO hangers).
- Minimum support width for face mount hangers with 10d and 16d nails is 1 1/4" and 2", respectively.

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Boise Cascade warrants its BCI® joist, Versa-Lam® LVL, and AllJoist® products to comply with our specifications, to be free from defects in material and workmanship, and to meet or exceed our performance specifications for the normal and expected life of the structure when correctly stored, installed and used according to our installation Guide.

DEALER CONTACT

NEED MORE INFORMATION?

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