Boise Cascade®
ENGINEERED WOOD PRODUCTS

Specifier Guide | West
BCI Joists and Versa-Lam LVL

BCI JOIST AND VERSA-LAM LVL WEST SPECIFIER GUIDE

BCI Joists 5000, 6000, 6500, 60, 90
Versa-Lam LVL 1.5E 1800, 1.8E 2400, 1.8E 2650, 2.1E 2800, 2.1E 3100

bc.com/ewp

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FASTER. STRONGER. EASIER.

The Boise Cascade Difference

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

- EWP sourced from sustainably managed forests.
- Peace of mind with our limited lifetime warranty.
- Engineered and manufactured with reliability in mind.
- Dedicated product support from knowledgeable engineers.
- Boise Cascade® suite of software helps design, size, and analyze projects.

BCI® Joist Advantages

High-performance floors start with BCI® Joists — providing strong, high-quality results along with the consistency and easy handling needed to get the job done efficiently.

- 20% stronger than comparably sized dimension lumber.
- Light weight reduces installation times.
- Greater strength = longer span capability.
- Pre-stamped knockouts and allowances for on-site hole cutting.
- Flanges made with Versa-Lam® LVL.

Versa-Lam® LVL Advantages

Get industry-leading overall value without sacrificing strength. Versa-Lam LVL beams and headers resist twisting, shrinking, and splitting — creating flatter, quieter floors that keep customers happy.

- Longer spans while remaining stable.
- No camber for flat floors and walls.
- Wide range of applications.
- Best-in-class bending strength and stiffness.
- Depths designed to match BCI® and AJS® joists.

Boise Cascade Chain-Of-Custody Certifications

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

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

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

Boise Cascade engineered wood products throughout North America can be ordered FSC® Chain-of-Custody (COC) certified, enabling homebuilders to achieve LEED® points residential and commercial green building programs including LEED for Homes and LEED for New Construction.

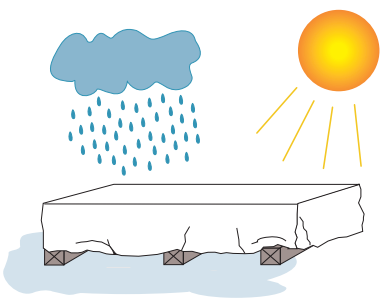
Boise Cascade engineered wood products are available as PEFC® Chain-of-Custody certified, SFI® Chain-of-Custody certified and SFI® Fiber-Sourcing certified, as well as NAHB Research Center Green Approved, enabling homebuilders to also obtain green building points through the Green Building Standards.

Code Evaluation Report: ICC-ES®/APA® ESR-1336 (IBC®, IRC®)

TABLE OF CONTENTS

PRODUCT STORAGE AND HANDLING

Protect product from rain and sun.

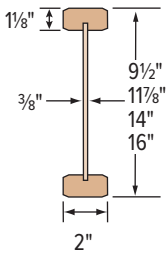


Keep product level and off the ground.

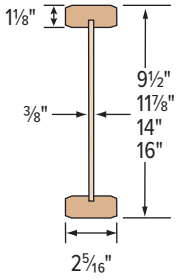
- BCI® and AJS® joists and Versa-Lam® LVL
  - must be stored, installed and used in accordance with the Boise Cascade EWP Installation Guide, building codes and, to the extent not inconsistent with the Boise Cascade EWP Installation Guide, usual and customary building practices and standards.
  - must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

BCI JOISTS

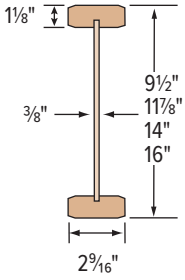
Product Profiles



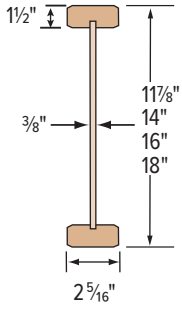
BCI® 5000 1.7



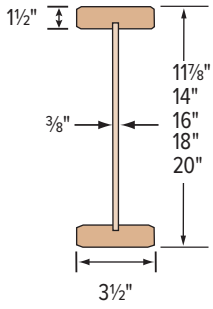
BCI® 6000 1.8



BCI® 6500 1.8



BCI® 60 2.0



BCI® 90 2.0

- ► Some products may not be available in all markets; Contact your Boise Cascade EWP representative for availability.
- ► BCI® joists products shall be installed in dry-use applications only, per ICC-ES/APA ESR report.

Architectural Specifications

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

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

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

Residential Floor Span Tables

About Floor Performance

Homeowner's expectations and opinions vary greatly due to the subjective nature of rating a new floor. Communication with the ultimate end user to determine their expectation is critical. ***Vibration*** is usually the cause of most complaints. Installing lateral bridging may help; however, squeaks may occur if not installed properly. Spacing the joists closer together does little to affect the perception of the floor's performance. The most common methods used to increase the performance and reduce vibration of wood floor systems is to ***increase the joist depth, limit joist deflections, glue and screw a thicker, tongue-and-groove subfloor, install the joists vertically plumb with level-bearing supports, and install a direct-attached ceiling to the bottom flanges of the joists.***

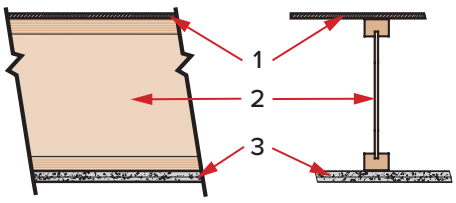
The floor span tables listed below offer three very different performance options, based on performance requirements of the homeowner.

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, **33% stiffer than L/360 code minimum**. However, floor performance may still be an issue in certain applications, especially with 9½" and 11⅞" 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"	5000 1.7	17'–1"	15'–7"	14'–9"	13'–9"	12'–0"	11'–6"	11'–6"	10'–0"	10'–0"	9'–6"	18'–11"	17'–0"	15'–6"	13'–11"	12'–0"
	6000 1.8	17'–11"	16'–5"	15'–6"	14'–5"	13'–2"	11'–6"	11'–6"	10'–0"	10'–0"	9'–10"	19'–10"	18'–2"	17'–2"	15'–9"	13'–8"
	6500 1.8	18'–5"	16'–10"	15'–11"	14'–10"	13'–6"	11'–6"	11'–6"	10'–0"	10'–0"	10'–0"	20'–5"	18'–8"	17'–8"	16'–5"	14'–3"
11⅞"	5000 1.7	20'–2"	18'–5"	17'–5"	15'–9"	13'–4"	15'–6"	14'–4"	13'–6"	12'–7"	11'–5"	22'–3"	19'–4"	17'–7"	15'–9"	13'–4"
	6000 1.8	21'–3"	19'–5"	18'–4"	17'–1"	14'–10"	15'–6"	15'–1"	14'–3"	13'–3"	12'–0"	23'–6"	21'–6"	20'–0"	17'–11"	14'–10"
	6500 1.8	21'–11"	20'–0"	18'–11"	17'–7"	14'–10"	16'–0"	15'–7"	14'–9"	13'–8"	12'–5"	24'–3"	22'–2"	20'–11"	18'–10"	14'–10"
	60 2.0	23'–3"	21'–3"	20'–1"	18'–8"	16'–4"	18'–0"	16'–7"	15'–7"	14'–6"	13'–2"	25'–9"	23'–6"	22'–3"	20'–9"	16'–4"
	90 2.0	26'–3"	23'–11"	22'–6"	20'–11"	19'–1"	19'–0"	18'–7"	17'–6"	16'–2"	14'–8"	29'–0"	26'–6"	25'–0"	23'–3"	19'–4"
14"	5000 1.7	22'–11"	21'–0"	19'–2"	17'–2"	13'–11"	18'–0"	16'–5"	15'–6"	14'–5"	13'–1"	24'–4"	21'–0"	19'–2"	17'–2"	13'–11"
	6000 1.8	24'–2"	22'–2"	20'–11"	19'–6"	15'–5"	18'–11"	17'–3"	16'–3"	15'–2"	13'–9"	26'–9"	23'–11"	21'–10"	19'–6"	15'–5"
	6500 1.8	24'–10"	22'–9"	21'–5"	20'–0"	15'–5"	19'–5"	17'–9"	16'–8"	15'–6"	14'–1"	27'–6"	25'–1"	22'–11"	20'–6"	15'–5"
	60 2.0	26'–5"	24'–2"	22'–9"	21'–3"	16'–4"	20'–8"	18'–10"	17'–9"	16'–5"	14'–11"	29'–3"	26'–8"	25'–3"	21'–10"	16'–4"
	90 2.0	29'–9"	27'–1"	25'–6"	23'–8"	19'–6"	23'–3"	21'–1"	19'–9"	18'–4"	16'–7"	32'–10"	30'–0"	28'–3"	26'–0"	19'–6"
16"	6000 1.8	26'–9"	24'–5"	23'–1"	20'–10"	15'–9"	20'–11"	19'–1"	18'–0"	16'–9"	15'–2"	29'–6"	25'–6"	23'–4"	20'–10"	15'–9"
	6500 1.8	27'–5"	25'–1"	23'–8"	21'–1"	15'–9"	21'–6"	19'–7"	18'–5"	17'–2"	15'–7"	30'–4"	26'–11"	24'–6"	21'–1"	15'–9"
	60 2.0	29'–3"	26'–8"	25'–2"	21'–10"	16'–4"	22'–10"	20'–10"	19'–7"	18'–2"	16'–4"	32'–4"	29'–6"	27'–4"	21'–10"	16'–4"
	90 2.0	32'–11"	29'–11"	28'–2"	26'–2"	19'–7"	25'–8"	23'–4"	21'–11"	20'–3"	18'–4"	36'–4"	33'–2"	31'–3"	26'–2"	19'–7"
18"	90 2.0	35'–11"	32'–8"	30'–9"	28'–7"	23'–10"	28'–1"	25'–5"	23'–11"	22'–2"	20'–0"	39'–8"	36'–2"	34'–1"	31'–9"	23'–10"
20"	90 2.0	38'–10"	35'–4"	33'–4"	30'–11"	24'–8"	30'–4"	27'–6"	25'–11"	24'–0"	21'–8"	42'–11"	39'–1"	36'–10"	32'–11"	24'–8"

NOTES

- Tables are based on
  - — residential floor load of 40 psf live load and 10 psf dead load (12 psf dead load for 90 2.0 joists).
  - — 23/32" minimum plywood/OSB rated sheathing glued and nailed to joists for composite action (joists spaced at 32" o.c. require sheathing rated for such spacing, such as ⅞" plywood/OSB).
  - — 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.
  - — maximum allowable clear distance between supports.
  - — minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- All 18" and 20" BCI® joists require web stiffeners at all bearing locations
- 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.

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



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

Fire Assembly Components

(1) Min. 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.

(2) BCI® joists at 24" o.c. or less.

(3) Two layers ⅝" Type X or two layers ½" Type C gypsum board, installed per Figures 2 or 3 of ICC-ES®/APA® ESR-1336.

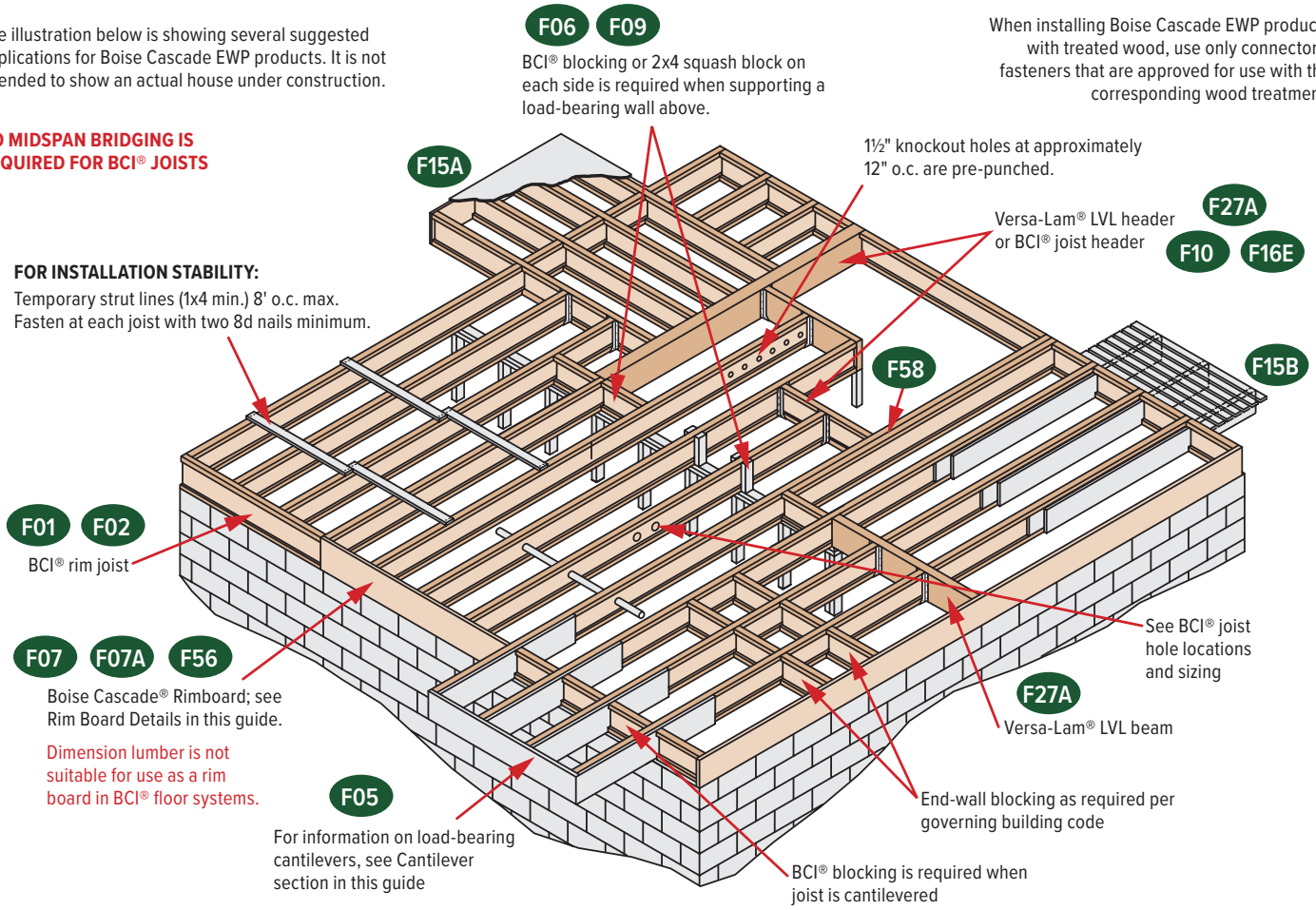
Sound Assembly Components *(when constructed with resilient channels)*

Add carpet and pad to fire assembly	STC = 54	IIC = 68	*or*
Add 3½" glass fiber insulation to fire assembly	STC = 55	IIC = 46	*or*
Add an additional layer of minimum ⅝" sheathing and 9½" glass fiber insulation to fire assembly	STC = 61	IIC = 50	

Floor Framing

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

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:

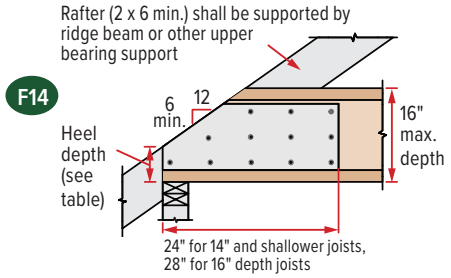
- Build a braced end wall at the end of the bay, or permanently install the first eight feet of BCI® joists and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of BCI® joists at the end of the bay.
- All rim joists, rim boards, x-bracing, blocking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

Nailing Requirements

- **BCI® rim joist, rim board or closure panel to BCI® joist:**
  - **Rim or closure panel:** Two nails, one each in the top and bottom flange. **For rim 1-1/2" thick or less**, use 8d x 2½" nails; **1¾" thick rim,** use 10d x 3" box nails.
  - **BCI® 5000 rim joist:** Two 10d box nails, one each in the top and bottom flange.
  - **BCI® 6000/60 rim joist:** Two 16d box nails, one each in the top and bottom flange.
  - **BCI® 6500/90 rim joist:** Toe-nail top flange to rim joist with two 10d box nails, one each side of flange.
- **BCI® rim joist, rim board or BCI® blocking panel to support:**
  - Min. 8d nails at 6" o.c. per IRC®.
  - Connect per design professional of record's specification for shear transfer.
- **BCI® joist to support:**
  - Two 8d nails, one on each side of the web, placed 1½" minimum from the end of the BCI® joist to limit splitting.
- **Sheathing to BCI® joist:**
  - Prescriptive nailing for residential floor sheathing requires 8d common nails at 6" o.c. at edges and 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 BCI® 5000, 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 EWP Engineering for more information.

BCI® Joist Slope Cut Reinforcement

Detail below restores the original allowable shear/reaction value to cut end of BCI® joist. BCI® joists shall not be used as a collar or rafter tension tie.



2x blocking required at bearing (not shown for clarity). 23/32" min. plywood/OSB-rated sheathing as reinforcement. Install reinforcement with face grain horizontal. Install on both sides of the joist, tight to bottom flange. Leave minimum ¼" gap between reinforcement and bottom of top flange. Apply construction adhesive to contact surfaces and fasten with 3 rows of min. 10d box nails at 6" o.c. Alternate nailing from each side and clinch.

Minimum Heel Depth						
End Wall Bearing	Roof Pitch					
	6:12	7:12	8:12	9:12	10:12	12:12
2 x 4	4⅜"	4⁵⁄₁₆"	4¼"	4¼"	4¼"	4¼"
2 x 6	3⅜"	3⁵⁄₁₆"	2⁵⁄₁₆"	2¾"	2⁹⁄₁₆"	2¼"

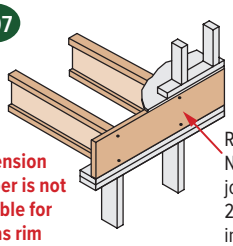
PROTECT BCI® JOISTS FROM THE WEATHER

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

Floor Framing Details

End Bearing Details

F07

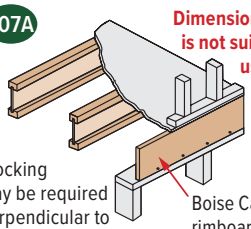


Dimension lumber is not suitable for use as rim board with BCI® joists.

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

F07A

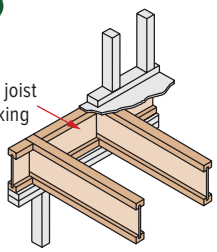
Dimension lumber is not suitable for use as rim board with BCI® joists.



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

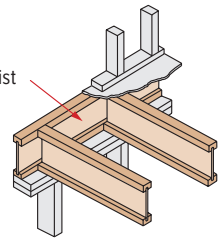
Boise Cascade® rimboard or BCI® joist

F01



BCI® joist blocking

F02

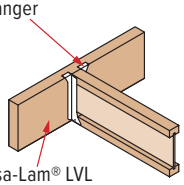


BCI® rim joist

BCI® rim joist requires 2x6 wall for minimum bearing

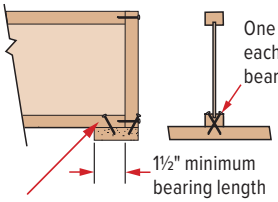
F27A

Top flange or face mount joist hanger



Versa-Lam® LVL

F52



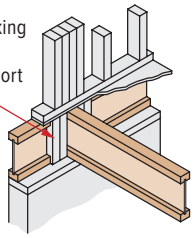
One 8d nail each side at bearing

1½" minimum bearing length

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

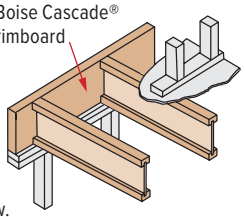
F08

Use solid blocking under all posts above for support to the bearing plate.



F03

Boise Cascade® rimboard

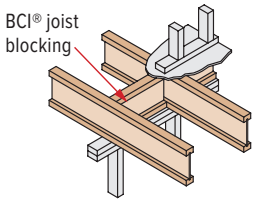


BCI® floor joist must be designed to carry wall above when not stacked over wall below.

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

Intermediate Bearing Details

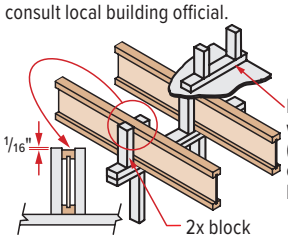
F06 For load bearing wall above (stacked over wall below)



BCI® joist blocking

Per IRC, blocking may be required at intermediate bearing for floor diaphragm in high seismic areas; consult local building official.

F09



1/16"

Load bearing wall above (stacked over wall below)

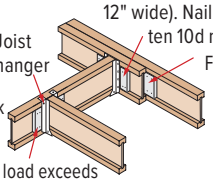
2x block

Double Squash Block Vertical Load (lb/ft)

Size	Joist Spacing			
	12"	16"	19.2"	24"
2x4	4,463	3,347	2,789	2,231
2x6	7,013	5,259	4,383	3,506

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

F10



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

Joist hanger

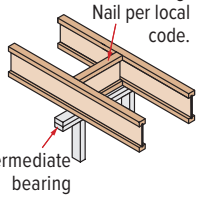
Filler block. Nail with ten 10d nails.

A backer block is required where top flange hanger load exceeds 250 lbs. All face mount hangers require backer blocks on both sides of the supporting joist's web.

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

F28

Floor Joist Blocking per IRC® 502.7 required in seismic design categories D0 and higher for floor diaphragm (required for all joist types).



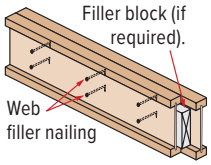
BCI® joist or Boise Cascade® Rimboard blocking. Nail per local code.

Intermediate bearing

Cross-bracing is allowed as blocking only if the supporting wall is not a braced or shear wall and there is no wall above.

F58

Double BCI® Joist Connection



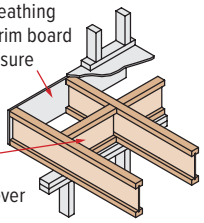
Filler block (if required).

Web filler nailing

- Filler block not required when all loads are top loaded and evenly applied to each ply (except BCI® 90 joist).
- Side loads or uneven top loads require filler block.
- Fasten floor sheathing to each ply per diaphragm nailing schedule.

See BC Tech Note IJ-13 for more information on nailing and filler block requirements.

F05



Sheathing or rim board closure

BCI® joist blocking required for cantilever

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

Lateral Support

- BCI® joists shall be laterally supported at the ends with hangers, rim board, BCI® rim joists or blocking panels. BCI® blocking panels or rim board are required at cantilever supports.
- Per IRC®, blocking may be required at intermediate bearings for floor diaphragm. In high seismic areas, consult local building official.

Minimum Bearing Length For BCI® Joists

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

BCI® Rim Joists and Blocking

Depth	Series	Vertical Load Capacity (PLF)	
		No W.S.(1)	W.S.(2)
9½"	5000, 6000, 6500	2,300	N/A
11⅞"	5000, 6000, 6500	2,150	N/A
	60, 90	2,500	N/A
14"	5000, 6000, 6500	2,000	N/A
	60, 90	2,400	N/A
16"	6000, 6500	1,900	2,500
	60, 90	2,300	2,700
18"	60, 90	N/A	2,700
20"	90	N/A	2,700

(1) No web stiffeners required.

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

N/A: Not applicable

Web Stiffeners

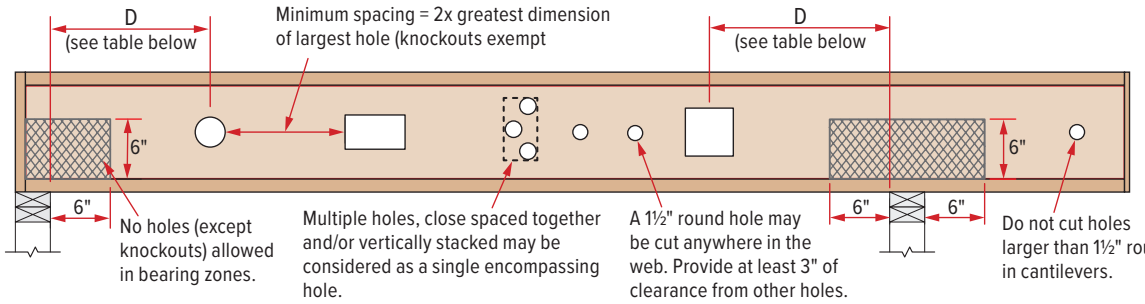
- See **Web Stiffener Requirements** on page 9.

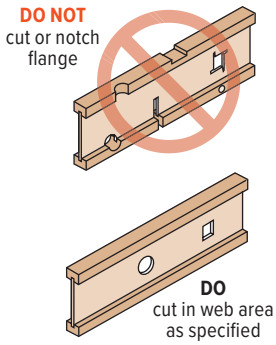
Backer and Filler Block Dimensions

Series	Backer Block Thickness	Filler Block Thickness
5000	¾" or ⅞" wood panels	Two ¾" wood panels or 2 x _
6000	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
6500	1⅛" or two ⅝" wood panels	2 x _ + ⅝" or ¾" wood panel
60	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
90	2 x _ lumber	Double 2 x _ lumber

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

Hole Location and Sizing





BCI® joists are manufactured with 1½" round perforated knockouts in the web at approximately 12" o.c. Minimum distance from support, listed 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"	7"	8"	8⅞"	10"	11"	12"	13"	14"	15"
Rectangular Hole Side			–	–	–	3"	5"	7"	–	–	–	–	–	–	–	–
Any 9½" Joist	Span	8'	1'-0"	1'-1"	1'-8"	2'-4"	2'-11"	3'-7"								
		12'	1'-0"	1'-7"	2'-7"	3'-6"	4'-5"	5'-4"								
		16'	1'-0"	1'-2"	3'-5"	4'-8"	5'-11"	7'-2"								
Round Hole Diameter			2"	3"	4"	5"	6"	7"	8"	8⅞"	10"	11"	12"	13"	14"	15"
Rectangular Hole Side			–	–	–	2	3"	5"	7"	8"	–	–	–	–	–	–
Any 11⅞" Joist	Span	8'	1'-0"	1'-1"	1'-6"	2'-0"	2'-5"	2'-11"	3'-5"	3'-10"						
		12'	1'-0"	1'-7"	2'-3"	3'-0"	3'-8"	4'-5"	5'-1"	5'-9"						
		16'	1'-2"	2'-1"	3'-0"	4'-0"	4'-11"	5'-10"	6'-10"	7'-8"						
		20'	1'-5"	2'-7"	3'-10"	5'-0"	6'-2"	7'-4"	8'-6"	9'-7"						
Round Hole Diameter			2"	3"	4"	5"	6"	7"	8"	8⅞"	10"	11"	12"	13"	14"	15"
Rectangular Hole Side			–	–	–	–	2"	3"	5"	6"	8"	9"	–	–	–	–
Any 14" Joist	Span	8'	1'-0"	1'-1"	1'-2"	1'-2"	1'-6"	1'-11"	2'-4"	2'-9"	3'-3	3'-8"				
		12'	1'-0"	1'-1"	1'-2"	1'-7"	2'-3"	2'-11"	3'-6"	4'-1"	4'-10"	5'-6"				
		16'	1'-0"	1'-1"	1'-3"	2'-2"	3'-0"	3'-10"	4'-9"	5'-6"	6'-6"	7'-4"				
		20'	1'-0"	1'-1"	1'-7"	2'-8"	3'-9"	4'-10"	5'-11"	6'-10"	8'-1"	9'-2"				
		24'	1'-0"	1'-1"	1'-11"	3'-3"	4'-6"	5'-10"	7'-1"	8'-3"	9'-9"	11'-0"				
Round Hole Diameter			2"	3"	4"	5"	6"	7"	8"	8⅞"	10"	11"	12"	13"	14"	15"
Rectangular Hole Side			–	–	–	–	–	2"	3"	5"	6"	7"	8"	10"	–	–
Any 16" Joist	Span	8'	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-3"	1'-7"	1'-11"	2'-4"	2'-9"	3'-2"	3'-7"		
		12'	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-9"	2'-4"	2'-11"	3'-7"	4'-2"	4'-9"	5'-4"		
		16'	1'-0"	1'-1"	1'-2"	1'-2"	1'-7"	2'-5"	3'-2"	3'-10"	4'-9"	5'-7"	6'-4"	7'-2"		
		20'	1'-0"	1'-1"	1'-2"	1'-2"	2'-0"	3'-0"	4'-0"	4'-10"	5'-11"	6'1-1"	7'-11"	8'-11"		
		24'	1'-0"	1'-1"	1'-2"	1'-3"	2'-5"	3'-7"	4'-9"	5'-10"	7'-2"	8'-4"	9'-6"	10'-9"		
Round Hole Diameter			2"	3"	4"	5"	6"	7"	8"	8⅞"	10"	11"	12"	13"	14"	15"
Rectangular Hole Side			–	–	–	–	–	–	2"	3"	5"	6"	7"	8"	10"	11"
18" BCI® 90 2.0 Joist	Span	12'	1'-0"	1'-1"	1'-2"	1'-2"	1'-5"	1'-11"	2'-4"	2'-9"	3'-3"	3'-9"	4'-2"	4'-8"	5'-1"	5'-7"
		16'	1'-0"	1'-1"	1'-2"	1'-4"	1'-11"	2'-7"	3'-2"	3'-8"	4'-5"	5'-0"	5'-7"	6'-3"	6'-10"	7'-5"
		20'	1'-0"	1'-1"	1'-2"	1'-8"	2'-5"	3'-3"	4'-0"	4'-8"	5'-6"	6'-3"	7'-0"	7'-9"	8'-7"	9'-4"
		24'	1'-0"	1'-1"	1'-2"	2'-0"	2'-11"	3'-10"	4'-9"	5'-7"	6'-7"	7'-6"	8'-5"	9'-4"	10'-3"	11'-2"
		28'	1'-0"	1'-1"	1'-4"	1'-5"	3'-5"	4'-6"	5'-7"	6'-6"	7'-9"	8'-9"	9'-10"	10'-11"	12'-0"	13'-1"
Round Hole Diameter			2"	3"	4"	5"	6"	7"	8"	8⅞"	10"	11"	12"	13"	14"	15"
Rectangular Hole Side			–	–	–	–	–	–	–	2"	3"	5"	6"	7"	8"	10"
20" BCI® 90 2.0 Joist	Span	12'	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-6"	1'-11"	2'-3"	2'-9"	3'-2"	3'-7"	3'-11"	4'-4"	4'-9"
		16'	1'-0"	1'-1"	1'-2"	1'-2"	1'-6"	2'-1"	2'-7"	3'-1"	3'-8"	4'-3"	4'-9"	5'-3"	5'-10"	6'-4"
		20'	1'-0"	1'-1"	1'-2"	1'-3"	1'-11"	2'-7"	3'-3"	3'-10"	4'-7"	5'-3"	5'-11"	6'-7"	7'-4"	8'-0"
		24'	1'-0"	1'-1"	1'-2"	1'-6"	2'-4"	3'-1"	3'-11"	4'-7"	5'-6"	6'-4"	7'-2"	7'-11"	8'-9"	9'-7"
		28'	1'-0"	1'-1"	1'-2"	1'-9"	2'-8"	3'-8"	4'-7"	5'-5"	6'-6"	7'-5"	8'-4"	9'-3"	10'-3"	11'-2"

HOW TO USE THIS TABLE

(1) Select a table row based on joist depth and the actual joist span rounded up to the nearest span shown in the table.

(2) 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.

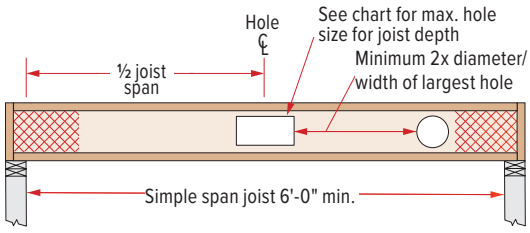
(3) The table value shown is the closest that the centerline of the hole may be to the edge or face of the nearest support.

NOTES

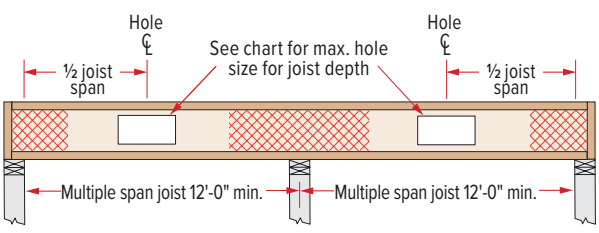
- **DO NOT** cut joist flanges.
- Holes apply to either single or multiple joists in repetitive member conditions.
- For multiple holes, the amount of horizontal uncut web between holes must equal at least twice the diameter (or longest side) of the largest hole.
- Table assumes one hole per horizontal location. Holes located above or below another should be considered as a single hole that encompasses all the holes.
- 1½" round knockouts in the web may be removed by using a short piece of metal pipe and hammer.
- Single holes may be positioned anywhere vertically in the web, provided they do not extend into either flange.
- This table was designed to apply *only* to the design conditions covered by tables elsewhere in this publication (maximum uniform PLF load).
- Use the BC Calc® software to check other hole sizes or holes in other design conditions. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.

Large Rectangular Holes

Single Span Joist



Multiple Span Joist



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

Maximum Hole Size

Joist Depth	Simple Span	Multiple Span
9½"	6" x 14"	6" x 12"
11⅞"	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"

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

BCI Joists—Reinforced Load-Bearing Cantilevers

Joist Depth	Joist Series	Roof Truss Span	Roof Total Load (PSF)								
			35			45			55		
			Joist Spacing (inches)								
			16	19.2	24	16	19.2	24	16	19.2	24
9½"	5000	24'	0	0	0	0	0	X	0	X	X
		26'	0	0	0	0	0	X	0	X	X
		28'	0	0	X	0	0	X	0	X	X
		30'	0	0	X	0	X	X	X	X	X
		32'	0	0	X	0	X	X	X	X	X
		34'	0	0	X	0	X	X	X	X	X
		36'	0	0	X	0	X	X	X	X	X
		38'	0	X	X	X	X	X	X	X	X
		40'	0	X	X	X	X	X	X	X	X
	6000	24'	0	0	0	0	0	0	0	0	X
		26'	0	0	0	0	0	0	0	0	X
		28'	0	0	0	0	0	1	0	1	X
		30'	0	0	0	0	0	X	0	1	X
		32'	0	0	0	0	0	X	0	X	X
		34'	0	0	0	0	0	X	0	X	X
		36'	0	0	WS	0	0	X	0	X	X
		38'	0	0	1	0	1	X	0	X	X
		40'	0	0	X	0	X	X	1	X	X
	6500	24'	0	0	0	0	0	0	0	0	1
		26'	0	0	0	0	0	WS	0	0	X
		28'	0	0	0	0	0	1	0	0	X
		30'	0	0	0	0	0	1	0	1	X
		32'	0	0	0	0	0	X	0	1	X
		34'	0	0	0	0	0	X	0	1	X
		36'	0	0	WS	0	0	X	0	1	X
		38'	0	0	1	0	1	X	0	X	X
		40'	0	0	1	0	1	X	1	X	X
11⅞"	5000	24'	0	0	0	0	0	WS	0	0	X
		26'	0	0	0	0	0	WS	0	0	X
		28'	0	0	0	0	0	WS	0	WS	X
		30'	0	0	0	0	0	X	0	WS	X
		32'	0	0	WS	0	0	X	0	X	X
		34'	0	0	WS	0	0	X	0	X	X
		36'	0	0	WS	0	WS	X	0	X	X
		38'	0	0	1	0	WS	X	WS	X	X
		40'	0	0	X	0	X	X	X	X	X
	6000	24'	0	0	0	0	0	0	0	0	X
		26'	0	0	0	0	0	0	0	0	X
		28'	0	0	0	0	0	WS	0	0	X
		30'	0	0	0	0	0	1	0	0	X
		32'	0	0	0	0	0	1	0	WS	X
		34'	0	0	0	0	0	1	0	1	X
		36'	0	0	WS	0	0	X	0	1	X
		38'	0	0	WS	0	0	X	0	1	X
		40'	0	0	1	0	WS	X	0	1	X
	6500	24'	0	0	0	0	0	0	0	0	X
		26'	0	0	0	0	0	0	0	0	X
		28'	0	0	0	0	0	WS	0	0	X
		30'	0	0	0	0	0	1	0	0	X
		32'	0	0	0	0	0	1	0	WS	X
		34'	0	0	0	0	0	1	0	1	X
		36'	0	0	WS	0	0	X	0	1	X
		38'	0	0	WS	0	0	X	0	1	X
		40'	0	0	1	0	WS	X	0	X	X

Joist Depth	Joist Series	Roof Truss Span	Roof Total Load (PSF)								
			35			45			55		
			Joist Spacing (inches)								
			16	19.2	24	16	19.2	24	16	19.2	24
11⅞"	90	24'	0	0	0	0	0	0	0	0	0
		26'	0	0	0	0	0	0	0	0	0
		28'	0	0	0	0	0	0	0	0	0
		30'	0	0	0	0	0	0	0	0	0
		32'	0	0	0	0	0	0	0	0	0
		34'	0	0	0	0	0	0	0	0	1
		36'	0	0	0	0	0	0	0	WS	1
		38'	0	0	0	0	0	0	0	1	1
		40'	0	0	0	0	0	0	0	1	2
	60	24'	0	0	0	0	0	0	0	0	1
		26'	0	0	0	0	0	0	0	WS	1
		28'	0	0	0	0	0	0	0	1	X
		30'	0	0	0	0	0	1	0	1	X
		32'	0	0	0	0	0	1	0	X	X
		34'	0	0	0	0	0	X	0	X	X
		36'	0	0	0	0	0	X	0	X	X
		38'	0	0	0	0	0	X	0	X	X
		40'	0	0	1	0	0	X	0	X	X
14"	5000	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	WS	0	0	WS
		28'	0	0	0	0	0	WS	0	0	1
		30'	0	0	0	0	0	WS	0	WS	X
		32'	0	0	0	0	0	WS	0	WS	X
		34'	0	0	WS	0	0	1	0	WS	X
		36'	0	0	WS	0	0	1	0	WS	X
		38'	0	0	WS	0	WS	X	0	1	X
		40'	0	0	WS	0	WS	X	WS	X	X
	6000	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	WS	0	0	WS
		28'	0	0	0	0	0	WS	0	0	WS
		30'	0	0	0	0	0	WS	0	0	1
		32'	0	0	0	0	0	WS	0	0	1
		34'	0	0	0	0	0	WS	0	WS	X
		36'	0	0	0	0	0	WS	0	WS	X
		38'	0	0	WS	0	0	1	0	WS	X
		40'	0	0	WS	0	0	1	0	1	X
	6500	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	0	0	0	WS
		28'	0	0	0	0	0	WS	0	0	WS
		30'	0	0	0	0	0	WS	0	0	1
		32'	0	0	0	0	0	WS	0	0	X
		34'	0	0	0	0	0	WS	0	0	X
		36'	0	0	WS	0	0	WS	0	WS	X
		38'	0	0	WS	0	0	1	0	WS	X
		40'	0	0	WS	0	0	X	0	1	X
	60	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	0	0	0	WS
		28'	0	0	0	0	0	0	0	0	WS
		30'	0	0	0	0	0	WS	0	0	1
		32'	0	0	0	0	0	WS	0	0	1
		34'	0	0	0	0	0	WS	0	0	1
		36'	0	0	0	0	0	WS	0	WS	1
		38'	0	0	0	0	0	1	0	WS	X
		40'	0	0	WS	0	0	1	0	1	X

Joist Depth	Joist Series	Roof Truss Span	Roof Total Load (PSF)								
			35			45			55		
			Joist Spacing (inches)								
			16	19.2	24	16	19.2	24	16	19.2	24
14"	90	24'	0	0	0	0	0	0	0	0	0
		26'	0	0	0	0	0	0	0	0	0
		28'	0	0	0	0	0	0	0	0	0
		30'	0	0	0	0	0	0	0	0	0
		32'	0	0	0	0	0	0	0	0	0
		34'	0	0	0	0	0	0	0	0	WS
		36'	0	0	0	0	0	0	0	0	WS
		38'	0	0	0	0	0	0	0	0	1
		40'	0	0	0	0	0	0	0	0	1
16"	6000	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	0	0	0	WS
		28'	0	0	0	0	0	0	0	0	WS
		30'	0	0	0	0	0	WS	0	0	WS
		32'	0	0	0	0	0	WS	0	0	WS
		34'	0	0	0	0	0	WS	0	WS	WS
		36'	0	0	0	0	0	WS	0	WS	X
		38'	0	0	WS	0	0	WS	0	WS	X
		40'	0	0	WS	0	0	WS	0	WS	X
	6500	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	0	0	0	WS
		28'	0	0	0	0	0	WS	0	0	WS
		30'	0	0	0	0	0	WS	0	0	WS
		32'	0	0	0	0	0	WS	0	0	WS
		34'	0	0	0	0	0	WS	0	WS	WS
		36'	0	0	0	0	0	WS	0	WS	X
		38'	0	0	WS	0	0	WS	0	WS	X
		40'	0	0	WS	0	0	WS	0	WS	X
	60	24'	0	0	0	0	0	0	0	0	WS
		26'	0	0	0	0	0	0	0	0	WS
		28'	0	0	0	0	0	0	0	0	WS
		30'	0	0	0	0	0	0	0	0	WS
		32'	0	0	0	0	0	0	0	0	WS
		34'	0	0	0	0	0	0	0	0	WS
		36'	0	0	0	0	0	0	0	0	WS
		38'	0	0	0	0	0	0	0	0	WS
		40'	0	0	0	0	0	0	0	0	WS
	90	24'	0	0	0	0	0	0	0	0	0
		26'	0	0	0	0	0	0	0	0	0
		28'	0	0	0	0	0	0	0	0	0
		30'	0	0	0	0	0	0	0	0	0
		32'	0	0	0	0	0	0	0	0	0
		34'	0	0	0	0	0	0	0	0	WS
		36'	0	0	0	0	0	0	0	0	WS
		38'	0	0	0	0	0	0	0	0	WS
		40'	0	0	0	0	0	0	0	0	WS

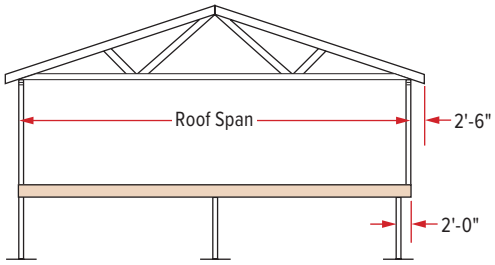
KEY TO TABLES

0 = No reinforcement required
WS = Web stiffeners at support
1 = Web stiffeners plus one reinforcer
2 = Web stiffeners plus two reinforcers
X = Use deeper joists or closer spacing

NOTES

- Cut 48" long reinforcers to match the joist depth. Use min. 23/32" plywood / OSB-rated sheathing, Exposure 1, 48/24 span-rated. The face grain must be horizontal (measure the 48" dimension along the long edge of the panel).
- Fasten the reinforcer to the joist flanges with 8d nails at 6" o.c. When reinforcing both sides, stagger the nails to limit splitting the joist flanges.
- Attach web stiffeners per intermediate Web Stiffener Nailing Schedule on page 9.
- Use the BC Calc® sizing software to analyze conditions that are not covered by this table. It may be possible to exceed the limitations of this table by analyzing a specific application with BC Calc® software.

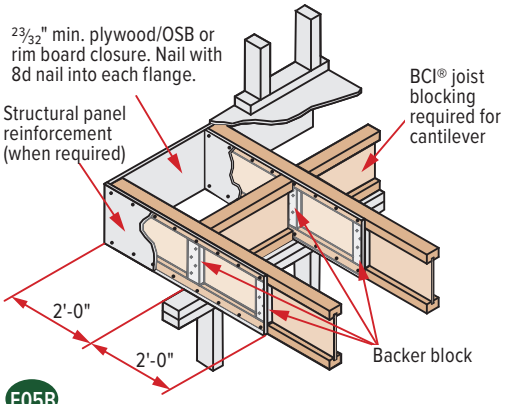
Reinforced Load-Bearing Cantilever Details



- The tables and details on pages 8 and 9 indicate the type of reinforcements, if any, that are required for load-bearing cantilevers up to a maximum length of 2'-0". Cantilevers longer than 2'-0" cannot be reinforced. However, longer cantilevers with lower loads may be allowable without reinforcement. Analyze specific applications with the BC Calc® software.

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

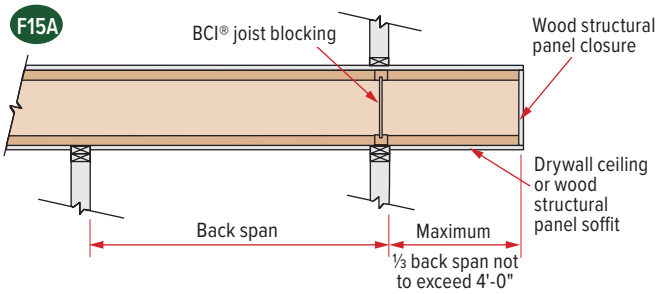
- 23/32" min. x 48" long plywood/OSB rated sheathing must match the full depth of the BCI® joist. Nail to the BCI® joist with 8d nails at 6" o.c. and nail with 4-8d nails into backer block. When reinforcing both sides, stagger nails to limit splitting. Install with face grain horizontal.
- The tables 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.



Uplift on back span shall be considered in all cantilever designs

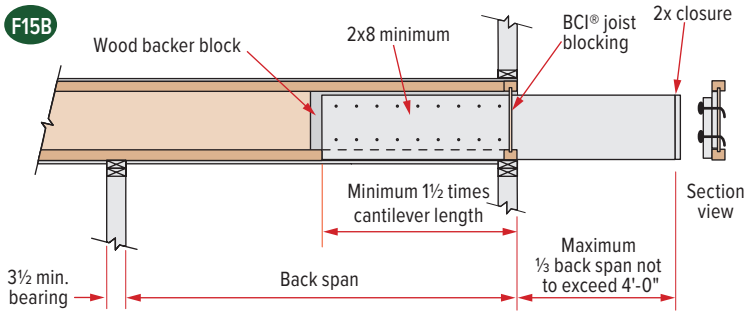
Non-Load-Bearing Wall Cantilever Details

- 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 IBC® Sections 107.2.5 and 110.3.6, or 2021 IBC Sections 107.2.5 and 110.3.7.



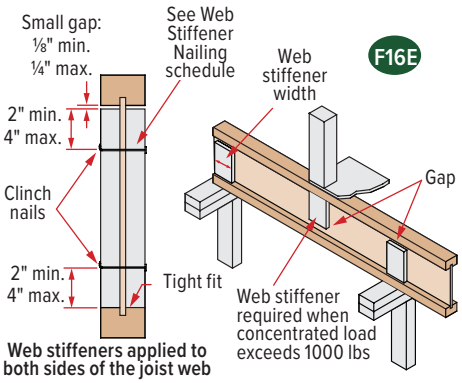
- These details apply to cantilevers with uniform loads only.
- Analyze BCI® joist cantilever condition with BC Calc® software.

- Fasten the 2x8 minimum to the BCI® joist by nailing through the backer block and joist web with two rows of 10d nails at 6" o.c. Clinch all nails. For BCI® 90 joists, use two rows of 16d nails on each side (four rows total) at 6" o.c.



- 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.1/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 IBC Sections 2304.12.2.5 and 2304.12.2.6, or 2021 IBC Sections 2304.12.2.4 and 2304.12.2.5.. Lumber joist shall be sloped.

Web Stiffener Requirements



Web stiffeners applied to both sides of the joist web

Web Stiffener Specifications

BCI® Joist Series	For Structural Capacity (Min. Thick)	Lateral Restraint in Hanger	Minimum Width
5000	5/8"	3/4"	2 5/16"
6000	3/4"	7/8"	2 5/16"
6500	3/4"	1" or 1 1/8"	2 5/16"
60	3/4"	7/8"	2 5/16"
90	2x4 lumber (vertical)		

NOTES

Web stiffeners are optional except as noted below.

- Web stiffeners are always required:
  - for all 18" and 20" joists at all bearing locations.
  - 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 skewed hangers or to achieve uplift values. Refer to the hanger manufacturer's installation requirements.
  - in certain roof applications. See Roof Framing Details on page 14.
  - 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.
  - when hanger does not laterally support the top flange (e.g., adjustable height hangers). Web stiffeners may be of multiple thickness (e.g., BCI® 6500, double ½" panel OK).
  - as needed for structural capacity, to increase the BCI® joist's reaction capacity at a specific bearing location.
- Web stiffeners may be cut from structural rated wood panels, engineered rimboard or 2x lumber (BCI® 90 only).
- Web stiffeners may be used to increase allowable reaction values. See BCI® Joist Design Properties on page 24 or use BC Calc® software.

Web Stiffener Nailing Schedule

BCI® Joist		Bearing Location	
Series	Depth	End	Intermediate
5000	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6000	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6500	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
60	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
90	11⅞"	3-16d	3-16d
	14"	5-16d	5-16d
	16"	6-16d	6-16d
	18"	7-16d	7-16d
	20"	8-16d	8-16d

Floor Load Tables

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

100% Load Duration

Span Length	BCI® 5000 1.7 Joist 2" Flange Width						BCI® 6000 1.8 Joist 2 5/16" Flange Width							
	9½"		11⅞"		14"		9½"		11⅞"		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
6'	–	280	–	300	–	313	–	320	–	333	–	346	–	353
7'	–	240	–	257	–	268	–	274	–	285	–	297	–	302
8'	–	210	–	225	–	235	–	240	–	250	–	260	–	265
9'	–	186	–	200	–	208	–	213	–	222	–	231	–	235
10'	151	168	–	180	–	188	175	192	–	200	–	208	–	212
11'	117	152	–	163	–	170	135	174	–	181	–	189	–	192
12'	91	136	146	150	–	156	107	160	–	166	–	173	–	176
13'	73	116	117	138	–	144	85	147	138	153	–	160	–	163
14'	59	100	95	128	–	134	69	129	113	142	–	148	–	151
15'	48	87	78	112	115	125	57	112	93	133	135	138	–	141
16'	40	76	65	98	96	116	47	95	78	125	113	130	–	132
17'			55	87	80	103	40	80	65	112	95	122	–	124
18'			47	77	68	92			56	100	81	115	108	117
19'			40	69	58	82			48	89	70	106	93	111
20'					50	74			41	81	60	96	80	106
21'					44	67					52	87	70	99
22'											46	79	61	90
23'														
24'														
25'														

NOTES

- 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.
- 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.
- Total Load values are limited by shear, moment, or deflection equal to L/240.
- 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.
- Total Load values assume minimum bearing lengths without web stiffeners for joist depths of 16" and less. Web stiffeners are required for 18" or 20" joists.
- 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.
  - do not consider composite action from gluing and nailing floor sheathing (composite action is considered in floor span tables on page 4).
- For assistance with floor design, consult the section About Floor Performance on page 4.

Floor Load Tables

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

100% Load Duration

Span Length	BCI® 6500 1.8 Joist 2⁹⁄₁₆" Flange Width								BCI® 60 2.0 Joist 2⁵⁄₁₆" Flange Width					
	9½"		11⅞"		14"		16"		11⅞"		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
6'	–	320	–	333	–	346	–	353	–	366	–	366	–	366
7'	–	274	–	285	–	297	–	302	–	314	–	314	–	314
8'	–	240	–	250	–	260	–	265	–	275	–	275	–	275
9'	–	213	–	222	–	231	–	235	–	244	–	244	–	244
10'	190	192	–	200	–	208	–	212	–	220	–	220	–	220
11'	147	174	–	181	–	189	–	192	–	200	–	200	–	200
12'	116	160	–	166	–	173	–	176	–	183	–	183	–	183
13'	93	147	152	153	–	160	–	163	–	169	–	169	–	169
14'	76	137	124	142	–	148	–	151	149	157	–	157	–	157
15'	62	124	103	133	–	138	–	141	123	146	–	146	–	146
16'	52	104	85	125	123	130	–	132	103	137	–	137	–	137
17'	44	88	72	117	104	122	–	124	87	129	125	129	–	129
18'			61	110	88	115	117	117	74	122	106	122	–	122
19'			52	99	76	109	101	111	63	115	92	115	–	115
20'			45	89	65	104	87	106	55	110	79	110	105	110
21'					57	96	76	100	48	96	69	104	92	104
22'					50	88	66	96	42	84	60	100	81	100
23'					44	80	58	92			53	95	71	95
24'							52	84			47	91	63	91
25'							46	77			42	84	56	88
26'							41	72					50	84
27'													45	81
28'													40	78
29'														
30'														

NOTES

- 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.

Floor Load Tables

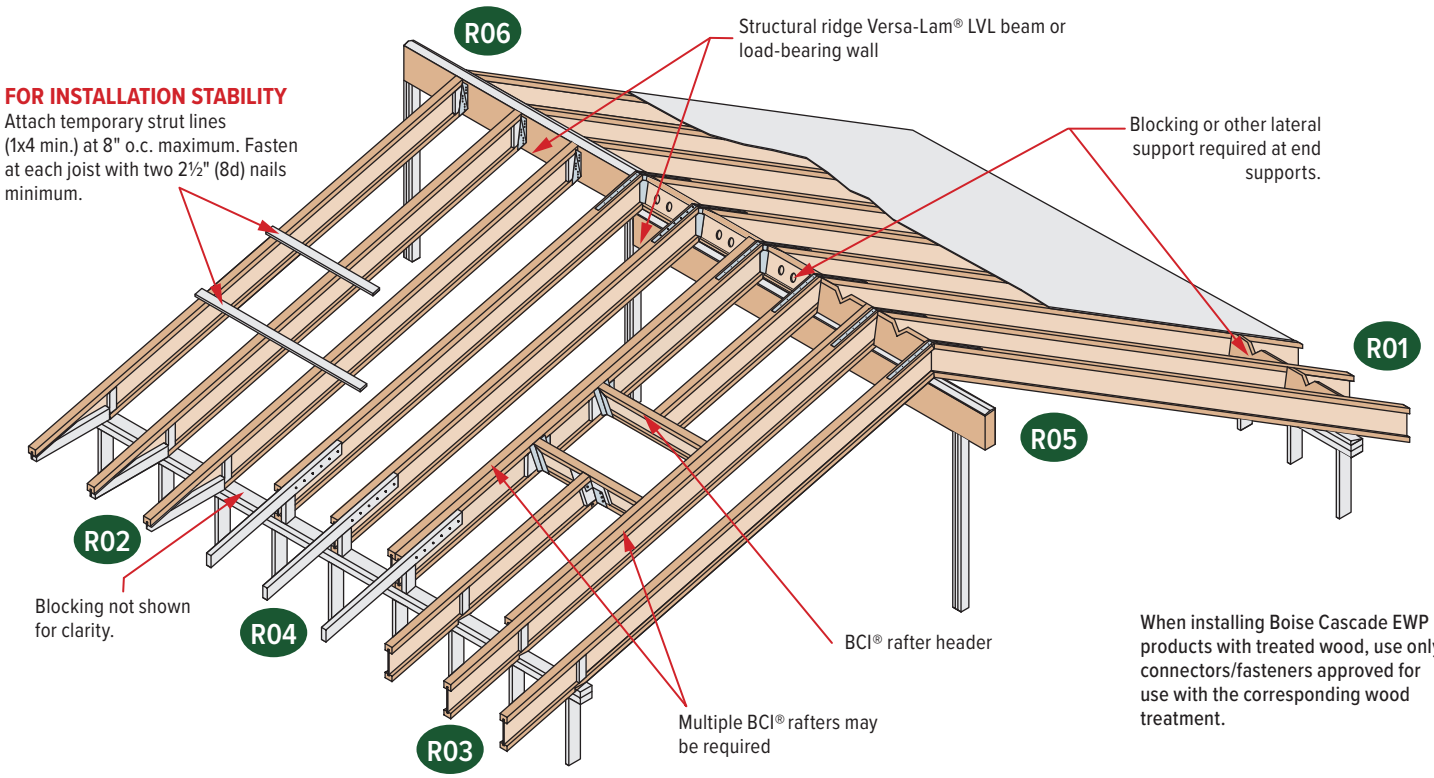
Allowable Uniform Floor Load (in pounds per lineal foot (PLF)

100% Load Duration

Span Length	BCI® 90 2.0 Joist 3½" Flange Width									
	11⅞"		14"		16"		18"		20"	
	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load	Live Load	Total Load
6'	–	450	–	453	–	456	–	553	–	573
7'	–	385	–	388	–	391	–	474	–	491
8'	–	337	–	340	–	342	–	415	–	430
9'	–	300	–	302	–	304	–	368	–	382
10'	–	270	–	272	–	274	–	332	–	344
11'	–	245	–	247	–	249	–	301	–	312
12'	–	225	–	226	–	228	–	276	–	286
13'	–	207	–	209	–	210	–	255	–	264
14'	–	192	–	194	–	195	–	237	–	245
15'	174	180	–	181	–	182	–	221	–	229
16'	146	168	–	170	–	171	–	207	–	215
17'	124	158	–	160	–	161	–	195	–	202
18'	106	150	150	151	–	152	–	184	–	191
19'	91	142	129	143	–	144	–	174	–	181
20'	79	135	112	136	–	137	–	166	–	172
21'	69	128	86	129	–	130	–	158	–	163
22'	61	122	90	123	115	124	146	150	–	156
23'	53	107	76	118	101	119	129	144	–	149
24'	47	95	68	113	90	114	115	138	–	143
25'	42	85	60	108	80	109	103	132	128	137
26'			54	104	72	105	92	127	115	132
27'			48	97	65	101	83	122	104	127
28'			44	88	58	97	75	118	94	122
29'					53	94	68	114	85	118
30'					48	91	62	110	77	114

NOTES

- 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.



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 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 2½" (8d) nails.
- The ends of cantilevers must be temporarily secured by strut lines on both the top and bottom flanges.
- Straighten the BCI® joist to within ½" of true alignment before attaching strut lines and sheathing.
- Remove the temporary strut lines only as required to install the permanent sheathing.
- Failure to install temporary bracing may result in sideways buckling or roll-over under light construction loads.

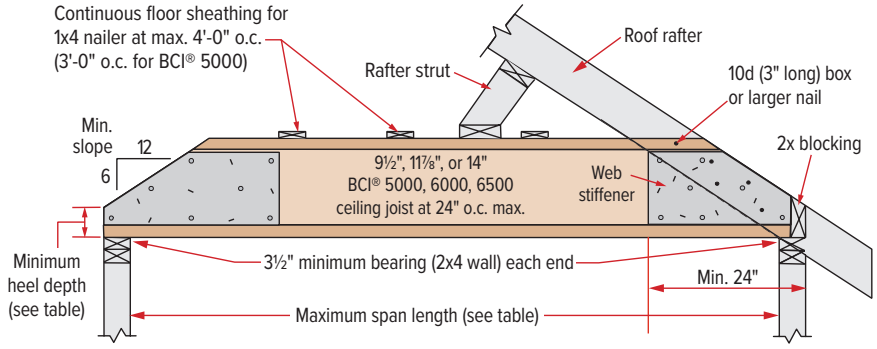
BCI® Ceiling Joist with Bevel End Cut

(For limited-access attics only)

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

NOTES:

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



Ceiling loads: Live Load 10 PSF Dead Load 7 PSF

Minimum Heel Depths

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

Maximum Span Lengths Without Roof Loads

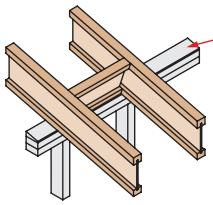
9½" BCI® 5000, /6000, 6500	19'-6"
11⅞" BCI® 5000, 6000, 6500	22'-0"
14" BCI® 6000, 6500	25'-0"

- If roof loads are present, see first two notes at left.

Roof Framing Details

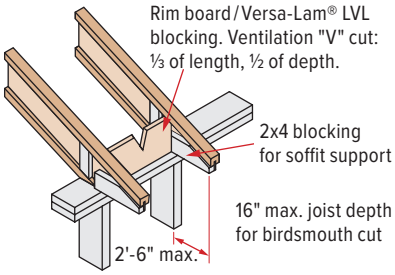
Additional roof framing details available with BC Framer® software

R01



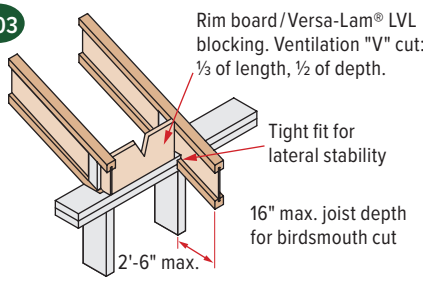
Simpson Strong-Tie VPA or MiTek TMP connectors or equal can be used in lieu of beveled plate for slopes from 3:12 to 12:12.

R02



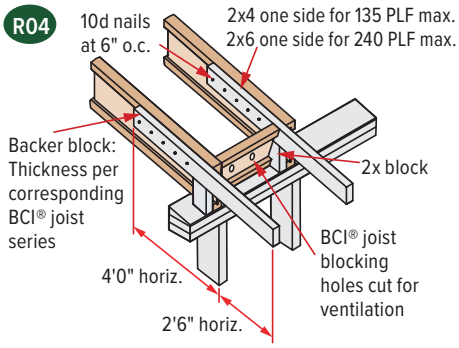
BCI® joist flanges may be birdsmouth cut only at the low end of the joist, and cut flange must bear fully on plate. Web stiffener required on each side.

R03

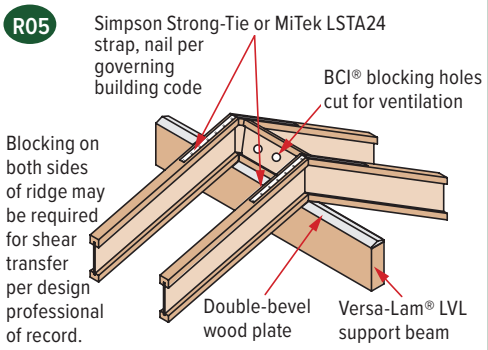


BCI® joist flanges may be birdsmouth cut only at the low end of the joist, and cut flange must bear fully on plate. Web stiffener required on each side.

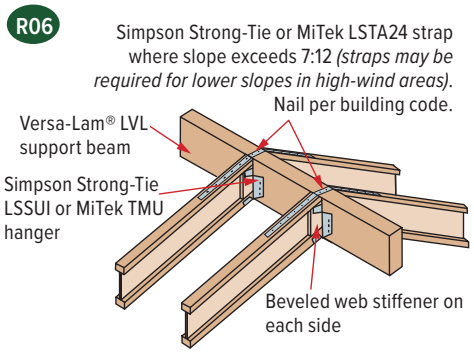
R04



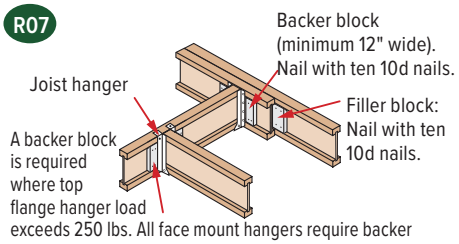
R05



R06



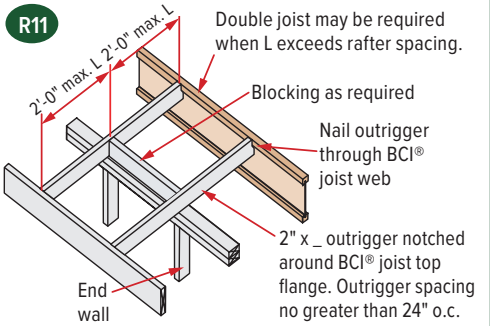
R07



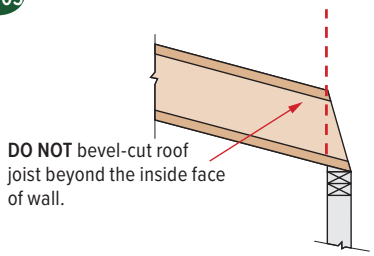
exceeds 250 lbs. All face mount hangers require backer blocks on both sides of the supporting joist's web.

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

R11



DN05



Lateral Support

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

Minimum Bearing Length For BCI® Joists

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

Nailing Requirements

- **BCI® rim joist, rim board or closure panel to BCI® joist:**
  - **Rims or closure panel:** Two nails, one each in the top and bottom flange; Up to 1½" thick rim, use 8d x 2½" nails; for 1¾" thick rim, use 10d box x 3" nails.
  - **BCI® 5000 rim joist:** Two 10d box nails, one each in the top and bottom flange.
  - **BCI® 6000/60 rim joist:** Two 16d box nails, one each in the top and bottom flange.
  - **BCI® 6500/90 rim joist:** Toe-nail top flange to rim joist with Two 10d box nails, one each side of flange.
- **BCI® rim joist, rim board or BCI® blocking panel to support:**
  - Min. 8d nails at 6" o.c. per IRC®.
  - Connection per design professional of record's specification for shear transfer.
- **BCI® joist to support:**
  - Two 8d nails, one on each side of the web, placed 1½" minimum from the end of the BCI® joist to limit splitting.
- **Sheathing to BCI® joist:**
  - Prescriptive residential roof sheathing 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 BCI® 5000, 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 EWP Engineering for more information.

Web Stiffeners

- See Web Stiffener Requirements on page 9.

Maximum Slope

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

Ventilation

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

Birdsmouth Cuts

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

Backer and Filler Block Dimensions

Series	Backer Block Thickness	Filler Block Thickness
5000	¾" or ⅞" wood panels	Two ¾" wood panels or 2 x _
6000	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
6500	1⅛" or two ⅝" wood panels	2 x _ + ⅝" or ¾" wood panel
60	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
90	2 x _ lumber	Double 2 x _ lumber

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

Roof Span Tables

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

115% and 125% Load Duration

Condition				BCI® 5000 1.7 Joist									BCI® 6000 1.8 Joist												
				9½"			11⅞"			14"			9½"			11⅞"			14"			16"		
O.C. Spacing and 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	4:12 or Less	4:12 to 8:12	8:12 to 12:12
12" o.c.	Non-Snow 125%	20	10	24'-1"	22'-9"	21'-1"	28'-7"	26'-11"	25'-0"	32'-7"	30'-8"	28'-6"	25'-6"	24'-1"	22'-4"	30'-5"	28'-8"	26'-7"	34'-8"	32'-8"	30'-4"	38'-4"	36'-2"	33'-6"
		20	15	22'-10"	21'-5"	19'-9"	27'-1"	25'-5"	23'-5"	30'-10"	29'-0"	26'-9"	24'-2"	22'-8"	20'-11"	28'-10"	27'-1"	25'-0"	32'-10"	30'-10"	28'-5"	36'-4"	34'-1"	31'-5"
		20	20	21'-9"	20'-5"	18'-9"	25'-10"	24'-2"	22'-3"	29'-5"	27'-7"	25'-4"	23'-1"	21'-7"	19'-10"	27'-6"	25'-9"	23'-8"	31'-4"	29'-4"	26'-11"	34'-8"	32'-5"	29'-10"
	Snow 115%	25	10	22'-11"	21'-8"	20'-2"	27'-2"	25'-8"	23'-10"	30'-10"	29'-3"	27'-2"	24'-3"	22'-11"	21'-4"	28'-11"	27'-4"	25'-5"	32'-11"	31'-1"	28'-11"	36'-5"	34'-5"	32'-0"
		25	15	21'-10"	20'-7"	19'-0"	25'-10"	24'-4"	22'-7"	28'-9"	27'-9"	25'-8"	23'-1"	21'-9"	20'-2"	27'-7"	25'-11"	24'-0"	31'-5"	29'-7"	27'-4"	34'-9"	32'-8"	30'-3"
		30	10	21'-11"	20'-9"	19'-4"	25'-11"	24'-7"	22'-11"	28'-10"	28'-0"	26'-1"	23'-2"	21'-11"	20'-6"	27'-7"	26'-2"	24'-5"	31'-6"	29'-9"	27'-9"	34'-10"	32'-11"	30'-9"
		30	15	21'-0"	19'-10"	18'-4"	24'-10"	23'-5"	21'-9"	27'-2"	26'-6"	24'-10"	22'-3"	21'-0"	19'-5"	26'-6"	25'-0"	23'-2"	30'-2"	28'-5"	26'-5"	33'-0"	31'-6"	29'-3"
		40	10	19'-11"	19'-1"	18'-0"	23'-7"	22'-8"	21'-4"	25'-10"	25'-5"	24'-4"	21'-1"	20'-3"	19'-1"	25'-1"	24'-1"	22'-9"	28'-8"	27'-5"	25'-11"	31'-4"	30'-5"	28'-8"
		40	15	19'-7"	18'-7"	17'-3"	22'-6"	22'-0"	20'-6"	24'-7"	24'-1"	23'-4"	20'-9"	19'-8"	18'-4"	24'-9"	23'-5"	21'-10"	27'-11"	26'-8"	24'-10"	29'-10"	29'-3"	27'-6"
		50	10	18'-5"	17'-8"	16'-9"	21'-7"	20'-11"	19'-11"	23'-7"	23'-3"	22'-8"	19'-6"	18'-9"	17'-9"	23'-3"	22'-4"	21'-2"	26'-6"	25'-5"	24'-2"	28'-8"	28'-2"	26'-8"
		50	15	18'-3"	17'-7"	16'-5"	20'-9"	20'-5"	19'-5"	22'-7"	22'-3"	21'-8"	19'-6"	18'-7"	17'-4"	23'-3"	22'-2"	20'-8"	25'-8"	25'-3"	23'-7"	27'-5"	27'-0"	26'-1"
16" o.c.	Non-Snow 125%	20	10	21'-10"	20'-7"	19'-1"	25'-11"	24'-5"	22'-8"	29'-6"	27'-10"	25'-10"	23'-2"	21'-10"	20'-3"	27'-7"	26'-0"	24'-2"	31'-5"	29'-7"	27'-6"	34'-9"	32'-9"	30'-5"
		20	15	20'-8"	19'-5"	17'-11"	24'-6"	23'-0"	21'-3"	27'-8"	26'-3"	24'-3"	21'-11"	20'-7"	19'-0"	26'-1"	24'-6"	22'-8"	29'-9"	27'-11"	25'-9"	32'-11"	30'-11"	28'-6"
		20	20	19'-9"	18'-6"	17'-0"	23'-5"	21'-11"	20'-2"	25'-10"	25'-0"	22'-11"	20'-11"	19'-7"	18'-0"	24'-11"	23'-4"	21'-5"	28'-5"	26'-7"	24'-5"	31'-5"	29'-5"	27'-0"
	Snow 115%	25	10	20'-9"	19'-7"	18'-3"	24'-6"	23'-3"	21'-8"	26'-8"	26'-1"	24'-8"	22'-0"	20'-9"	19'-4"	26'-2"	24'-9"	23'-0"	29'-10"	28'-2"	26'-3"	32'-5"	31'-2"	29'-0"
		25	15	19'-9"	18'-7"	17'-3"	22'-10"	22'-1"	20'-5"	24'-10"	24'-3"	23'-4"	20'-11"	19'-9"	18'-3"	24'-11"	23'-6"	21'-9"	28'-3"	26'-9"	24'-10"	30'-3"	29'-5"	27'-5"
		30	10	19'-10"	18'-9"	17'-6"	22'-11"	22'-3"	20'-9"	24'-11"	24'-6"	23'-8"	21'-0"	19'-11"	18'-7"	25'-0"	23'-8"	22'-1"	28'-4"	27'-0"	25'-2"	30'-4"	29'-9"	27'-10"
		30	15	19'-0"	17'-11"	16'-8"	21'-6"	21'-0"	19'-9"	23'-5"	22'-11"	22'-2"	20'-1"	19'-0"	17'-7"	24'-0"	22'-7"	21'-0"	26'-8"	25'-9"	23'-11"	28'-6"	27'-10"	26'-6"
		40	10	18'-0"	17'-4"	16'-4"	20'-6"	20'-2"	19'-4"	22'-4"	22'-0"	21'-7"	19'-1"	18'-4"	17'-3"	22'-9"	21'-10"	20'-7"	25'-5"	24'-11"	23'-6"	27'-2"	26'-9"	26'-0"
		40	15	17'-2"	16'-10"	15'-8"	19'-6"	19'-1"	18'-7"	21'-3"	20'-10"	20'-3"	18'-9"	17'-9"	16'-7"	22'-2"	21'-2"	19'-9"	24'-2"	23'-8"	22'-6"	25'-10"	25'-4"	24'-8"
		50	10	16'-6"	16'-0"	15'-2"	18'-8"	18'-6"	18'-0"	20'-4"	20'-1"	19'-9"	17'-8"	16'-11"	16'-1"	21'-1"	20'-2"	19'-2"	23'-2"	22'-11"	21'-10"	24'-9"	24'-6"	24'-1"
		50	15	15'-10"	15'-6"	14'-10"	17'-11"	17'-7"	17'-3"	19'-6"	19'-2"	18'-9"	17'-8"	16'-10"	15'-9"	20'-4"	20'-0"	18'-9"	22'-2"	21'-10"	21'-4"	23'-9"	23'-4"	22'-10"
19.2" o.c.	Non-Snow 125%	20	10	20'-6"	19'-4"	18'-0"	24'-4"	22'-11"	21'-4"	27'-5"	26'-2"	24'-3"	21'-9"	20'-6"	19'-0"	25'-11"	24'-5"	22'-8"	29'-6"	27'-10"	25'-10"	32'-8"	30'-10"	28'-7"
		20	15	19'-5"	18'-3"	16'-10"	23'-0"	21'-8"	20'-0"	25'-3"	24'-6"	22'-9"	20'-7"	19'-4"	17'-10"	24'-6"	23'-0"	21'-3"	27'-11"	26'-3"	24'-3"	30'-8"	29'-0"	26'-10"
		20	20	18'-6"	17'-4"	15'-11"	21'-8"	20'-7"	18'-11"	23'-7"	22'-9"	21'-7"	19'-7"	18'-4"	16'-11"	23'-4"	21'-11"	20'-2"	26'-8"	24'-11"	22'-11"	28'-8"	27'-7"	25'-5"
	Snow 115%	25	10	19'-6"	18'-5"	17'-2"	22'-4"	21'-10"	20'-4"	24'-4"	23'-10"	23'-2"	20'-7"	19'-6"	18'-2"	24'-7"	23'-3"	21'-8"	27'-8"	26'-6"	24'-8"	29'-7"	28'-11"	27'-3"
		25	15	18'-4"	17'-6"	16'-2"	20'-10"	20'-3"	19'-2"	22'-8"	22'-1"	21'-4"	19'-8"	18'-6"	17'-2"	23'-5"	22'-1"	20'-5"	25'-9"	25'-1"	23'-4"	27'-7"	26'-10"	25'-9"
		30	10	18'-5"	17'-8"	16'-5"	20'-11"	20'-6"	19'-6"	22'-9"	22'-4"	21'-10"	19'-8"	18'-8"	17'-5"	23'-6"	22'-3"	20'-9"	25'-10"	25'-4"	23'-8"	27'-8"	27'-2"	26'-2"
		30	15	17'-4"	16'-10"	15'-8"	19'-7"	19'-2"	18'-6"	21'-5"	20'-11"	20'-3"	18'-11"	17'-10"	16'-7"	22'-4"	21'-3"	19'-9"	24'-4"	23'-9"	22'-6"	26'-0"	25'-5"	24'-7"
		40	10	16'-6"	16'-3"	15'-4"	18'-8"	18'-5"	18'-0"	20'-4"	20'-1"	19'-8"	17'-11"	17'-2"	16'-3"	21'-3"	20'-6"	19'-4"	23'-2"	22'-10"	22'-1"	24'-9"	24'-5"	23'-11"
		40	15	15'-8"	15'-4"	14'-8"	17'-9"	17'-5"	16'-11"	19'-4"	19'-0"	18'-6"	17'-8"	16'-8"	15'-7"	20'-2"	19'-10"	18'-7"	22'-0"	21'-7"	21'-0"	23'-6"	23'-1"	22'-6"
		50	10	15'-0"	14'-10"	14'-3"	17'-0"	16'-10"	16'-7"	18'-7"	18'-4"	18'-0"	16'-7"	15'-11"	15'-1"	19'-5"	19'-0"	18'-0"	21'-1"	20'-10"	20'-6"	22'-7"	22'-4"	21'-11"
		50	15	14'-5"	14'-2"	13'-10"	16'-4"	16'-1"	15'-8"	17'-10"	17'-6"	17'-1"	16'-4"	15'-9"	14'-9"	18'-7"	18'-3"	17'-7"	20'-3"	19'-11"	19'-5"	21'-8"	21'-3"	20'-10"
24" o.c.	Non-Snow 125%	20	10	19'-0"	17'-11"	16'-8"	22'-5"	21'-3"	19'-9"	24'-6"	23'-11"	22'-6"	20'-1"	19'-0"	17'-7"	24'-0"	22'-7"	21'-0"	27'-4"	25'-9"	23'-11"	29'-9"	28'-6"	26'-6"
		20	15	18'-0"	16'-11"	15'-7"	20'-9"	20'-0"	18'-6"	22'-7"	21'-11"	21'-0"	19'-0"	17'-11"	16'-6"	22'-8"	21'-4"	19'-8"	25'-8"	24'-4"	22'-5"	27'-5"	26'-7"	24'-10"
		20	20	17'-1"	16'-1"	14'-9"	19'-4"	18'-8"	17'-6"	21'-1"	20'-4"	19'-5"	18'-2"	17'-0"	15'-8"	21'-8"	20'-3"	18'-8"	23'-11"	23'-1"	21'-3"	25'-7"	24'-9"	23'-6"
	Snow 115%	25	10	17'-7"	17'-1"	15'-11"	19'-11"	19'-6"	18'-10"	21'-9"	21'-3"	20'-8"	19'-1"	18'-1"	16'-10"	22'-8"	21'-6"	20'-0"	24'-8"	24'-2"	22'-10"	26'-5"	25'-10"	25'-2"
		25	15	16'-5"	15'-11"	15'-0"	18'-7"	18'-1"	17'-5"	20'-3"	19'-9"	19'-0"	18'-2"	17'-2"	15'-10"	21'-2"	20'-5"	18'-11"	23'-0"	22'-5"	21'-7"	24'-8"	24'-0"	23'-2"
		30	10	16'-5"	16'-2"	15'-3"	18'-8"	18'-4"	17'-10"	20'-4"	20'-0"	19'-6"	18'-3"	17'-3"	16'-2"	21'-2"	20'-7"	19'-3"	23'-1"	22'-8"	21'-11"	24'-9"	24'-3"	23'-8"
		30	15	15'-5"	15'-1"	14'-6"	17'-6"	17'-1"	16'-7"	19'-1"	18'-8"	18'-1"	17'-6"	16'-6"	15'-4"	19'-11"	19'-6"	18'-3"	21'-9"	21'-3"	20'-6"	23'-3"	22'-8"	21'-11"
		40	10	14'-8"	14'-6"	14'-2"	16'-8"	16'-5"	16'-1"	18'-2"	17'-11"	17'-7"	16'-7"	15'-11"	15'-0"	19'-0"	18'-8"	17'-11"	20'-8"	20'-4"	20'-0"	22'-1"	21'-9"	21'-4"
		40	15	14'-0"	13'-8"	13'-4"	15'-10"	15'-7"	15'-2"	17'-3"	16'-11"	16'-6"	15'-11"	15'-5"	14'-5"	18'-0"	17'-8"	17'-2"	19'-8"	19'-3"	18'-9"	21'-0"	20'-7"	19'-8"
		50	10	13'-5"	13'-3"	13'-0"	15'-3"	15'-0"	14'-9"	16'-7"	16'-5"	16'-1"	15'-3"	14'-8"	14'-0"	17'-4"	17'-1"	16'-8"	18'-10"	18'-8"	18'-4"	19'-10"	19'-5"	18'-9"
		50	15	12'-10"	12'-8"	12'-4"	14'-7"	14'-4"	14'-0"	15'-11"	15'-8"	14'-11"	14'-7"	14'-4"	13'-8"	16'-7"	16'-4"	15'-11"	17'-11"	17'-4"	16'-6"	18'-3"	17'-8"	16'-10"

NOTES

- 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.
  - 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.
  - 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 BC Calc® software.
- Slope roof joists at least ¼:12 to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Roof Span Tables

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

115% and 125% Load Duration

Condition				BCI® 6500 1.8 Joist											
				9½"			11⅞"			14"			16"		
O.C. Spacing and 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'-5"	24'-11"	23'-1"	31'-5"	29'-7"	27'-5"	35'-9"	33'-8"	31'-3"	39'-6"	37'-3"	34'-7"
		20	15	25'-0"	23'-6"	21'-8"	29'-9"	27'-11"	25'-9"	33'-10"	31'-9"	29'-4"	37'-5"	35'-2"	32'-5"
		20	20	23'-10"	22'-4"	20'-6"	28'-4"	26'-7"	24'-5"	32'-3"	30'-3"	27'-9"	35'-8"	33'-5"	30'-9"
	Snow 115%	25	10	25'-1"	23'-8"	22'-1"	29'-10"	28'-2"	26'-2"	33'-11"	32'-1"	29'-10"	37'-6"	35'-5"	33'-0"
		25	15	23'-11"	22'-6"	20'-10"	28'-5"	26'-9"	24'-9"	32'-4"	30'-5"	28'-2"	35'-9"	33'-8"	31'-2"
		30	10	23'-11"	22'-8"	21'-2"	28'-6"	27'-0"	25'-2"	32'-5"	30'-8"	28'-8"	35'-10"	33'-11"	31'-8"
		30	15	23'-0"	21'-8"	20'-1"	27'-4"	25'-9"	23'-11"	31'-1"	29'-4"	27'-3"	34'-5"	32'-5"	30'-1"
		40	10	21'-10"	20'-11"	19'-9"	25'-11"	24'-10"	23'-6"	29'-6"	28'-4"	26'-9"	32'-8"	31'-4"	29'-7"
		40	15	21'-5"	20'-4"	18'-11"	25'-6"	24'-2"	22'-6"	29'-1"	27'-6"	25'-7"	31'-5"	30'-5"	28'-4"
		50	10	20'-2"	19'-4"	18'-4"	24'-0"	23'-0"	21'-10"	27'-4"	26'-3"	24'-11"	30'-2"	29'-0"	27'-6"
		50	15	20'-2"	19'-3"	18'-0"	24'-0"	22'-10"	21'-4"	27'-0"	26'-0"	24'-4"	28'-11"	28'-5"	26'-11"
16" o.c.	Non-Snow 125%	20	10	23'-11"	22'-7"	20'-11"	28'-5"	26'-10"	24'-11"	32'-5"	30'-6"	28'-4"	35'-10"	33'-9"	31'-4"
		20	15	22'-8"	21'-3"	19'-8"	26'-11"	25'-4"	23'-4"	30'-8"	28'-10"	26'-7"	33'-11"	31'-10"	29'-5"
		20	20	21'-7"	20'-3"	18'-7"	25'-8"	24'-1"	22'-1"	29'-3"	27'-5"	25'-2"	32'-4"	30'-3"	27'-10"
	Snow 115%	25	10	22'-8"	21'-6"	20'-0"	27'-0"	25'-6"	23'-9"	30'-9"	29'-1"	27'-1"	34'-0"	32'-2"	29'-11"
		25	15	21'-8"	20'-5"	18'-11"	25'-9"	24'-3"	22'-5"	29'-4"	27'-7"	25'-7"	31'-10"	30'-6"	28'-3"
		30	10	21'-8"	20'-7"	19'-2"	25'-10"	24'-5"	22'-10"	29'-5"	27'-10"	26'-0"	31'-11"	30'-9"	28'-9"
		30	15	20'-10"	19'-8"	18'-3"	24'-9"	23'-4"	21'-8"	28'-1"	26'-7"	24'-8"	30'-0"	29'-4"	27'-4"
		40	10	19'-9"	18'-11"	17'-10"	23'-6"	22'-6"	21'-3"	26'-9"	25'-8"	24'-3"	28'-7"	28'-2"	26'-9"
		40	15	19'-5"	18'-5"	17'-2"	23'-1"	21'-11"	20'-5"	25'-5"	24'-11"	23'-3"	27'-2"	26'-8"	25'-8"
		50	10	18'-3"	17'-6"	16'-8"	21'-9"	20'-10"	19'-10"	24'-5"	23'-9"	22'-7"	26'-1"	25'-9"	24'-11"
		50	15	18'-3"	17'-5"	16'-3"	21'-5"	20'-9"	19'-4"	23'-5"	23'-0"	22'-0"	25'-0"	24'-7"	24'-0"
19.2" o.c.	Non-Snow 125%	20	10	22'-6"	21'-2"	19'-8"	26'-9"	25'-2"	23'-5"	30'-5"	28'-8"	26'-8"	33'-8"	31'-9"	29'-5"
		20	15	21'-3"	20'-0"	18'-5"	25'-4"	23'-9"	21'-11"	28'-10"	27'-1"	25'-0"	31'-10"	29'-11"	27'-7"
		20	20	20'-3"	19'-0"	17'-6"	24'-2"	22'-7"	20'-9"	27'-6"	25'-9"	23'-8"	30'-2"	28'-5"	26'-2"
	Snow 115%	25	10	21'-4"	20'-2"	18'-9"	25'-4"	24'-0"	22'-4"	28'-11"	27'-4"	25'-5"	31'-1"	30'-2"	28'-1"
		25	15	20'-4"	19'-2"	17'-9"	24'-2"	22'-9"	21'-1"	27'-2"	25'-11"	24'-0"	29'-0"	28'-3"	26'-7"
		30	10	20'-4"	19'-4"	18'-0"	24'-3"	23'-0"	21'-5"	27'-3"	26'-2"	24'-5"	29'-1"	28'-7"	27'-0"
		30	15	19'-6"	18'-5"	17'-1"	23'-3"	21'-11"	20'-4"	25'-7"	25'-0"	23'-2"	27'-5"	26'-9"	25'-8"
		40	10	18'-6"	17'-9"	16'-9"	22'-1"	21'-2"	20'-0"	24'-4"	24'-0"	22'-9"	26'-1"	25'-8"	25'-2"
		40	15	18'-3"	17'-3"	16'-1"	21'-3"	20'-7"	19'-2"	23'-2"	22'-9"	21'-10"	24'-9"	24'-4"	23'-8"
		50	10	17'-1"	16'-5"	15'-7"	20'-5"	19'-7"	18'-7"	22'-3"	22'-0"	21'-2"	23'-9"	23'-6"	23'-1"
		50	15	17'-1"	16'-4"	15'-3"	19'-7"	19'-3"	18'-2"	21'-4"	21'-0"	20'-6"	22'-10"	22'-2"	21'-2"
24" o.c.	Non-Snow 125%	20	10	20'-10"	19'-8"	18'-3"	24'-9"	23'-4"	21'-8"	28'-2"	26'-7"	24'-8"	31'-2"	29'-5"	27'-4"
		20	15	19'-8"	18'-6"	17'-1"	23'-5"	22'-0"	20'-4"	26'-8"	25'-1"	23'-2"	28'-11"	27'-9"	25'-7"
		20	20	18'-9"	17'-7"	16'-2"	22'-4"	20'-11"	19'-3"	25'-3"	23'-10"	21'-11"	26'-11"	26'-0"	24'-3"
	Snow 115%	25	10	19'-9"	18'-8"	17'-5"	23'-6"	22'-3"	20'-8"	26'-0"	25'-4"	23'-7"	27'-10"	27'-3"	26'-1"
		25	15	18'-10"	17'-9"	16'-5"	22'-3"	21'-1"	19'-6"	24'-3"	23'-7"	22'-3"	25'-11"	25'-3"	24'-4"
		30	10	18'-10"	17'-10"	16'-8"	22'-4"	21'-3"	19'-10"	24'-4"	23'-11"	22'-7"	26'-0"	25'-7"	24'-11"
		30	15	18'-1"	17'-1"	15'-10"	21'-0"	20'-4"	18'-10"	22'-10"	22'-4"	21'-6"	24'-5"	23'-11"	23'-1"
		40	10	17'-1"	16'-5"	15'-6"	20'-0"	19'-7"	18'-6"	21'-9"	21'-5"	21'-0"	23'-3"	22'-11"	22'-3"
		40	15	16'-9"	16'-0"	14'-11"	19'-0"	18'-7"	17'-9"	20'-8"	20'-4"	19'-3"	21'-7"	20'-9"	19'-8"
		50	10	15'-10"	15'-2"	14'-5"	18'-3"	18'-0"	17'-3"	19'-6"	19'-0"	18'-5"	19'-10"	19'-5"	18'-9"
		50	15	15'-5"	15'-1"	14'-1"	17'-3"	16'-8"	15'-11"	17'-11"	17'-4"	16'-6"	18'-3"	17'-8"	16'-10"

NOTES

- 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.
  - 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.
  - 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 BC Calc® software.
- Slope roof joists at least ¼:12 to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Roof Span Tables

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

115% and 125% Load Duration

Condition				BCI® 60 2.0 Joist								
				11⅞			14"			16"		
O.C. Spacing and 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
12" o.c.	Non-Snow 125%	20	10	33'-7"	31'-8"	29'-5"	38'-4"	36'-1"	33'-6"	42'-5"	40'-0"	37'-1"
		20	15	31'-10"	29'-11"	27'-7"	36'-3"	34'-1"	31'-5"	40'-2"	37'-8"	34'-10"
		20	20	30'-4"	28'-5"	26'-2"	34'-7"	32'-5"	29'-9"	38'-4"	35'-10"	33'-0"
	Snow 115%	25	10	31'-11"	30'-2"	28'-1"	36'-4"	34'-4"	32'-0"	40'-3"	38'-1"	35'-5"
		25	15	30'-5"	28'-8"	26'-6"	34'-8"	32'-8"	30'-3"	38'-5"	36'-2"	33'-6"
		30	10	30'-6"	28'-11"	26'-11"	34'-9"	32'-11"	30'-8"	38'-6"	36'-5"	34'-0"
		30	15	29'-3"	27'-7"	25'-7"	33'-4"	31'-5"	29'-2"	36'-11"	34'-10"	32'-4"
		40	10	27'-9"	26'-7"	25'-2"	31'-8"	30'-4"	28'-8"	35'-0"	33'-7"	31'-9"
		40	15	27'-4"	25'-10"	24'-1"	31'-2"	29'-6"	27'-6"	34'-6"	32'-8"	30'-5"
		50	10	25'-9"	24'-8"	23'-5"	29'-4"	28'-1"	26'-8"	32'-5"	31'-1"	29'-6"
		50	15	25'-9"	24'-6"	22'-11"	29'-4"	27'-11"	26'-1"	32'-5"	30'-11"	28'-11"
16" o.c.	Non-Snow 125%	20	10	30'-5"	28'-9"	26'-8"	34'-9"	32'-9"	30'-5"	38'-5"	36'-3"	33'-8"
		20	15	28'-10"	27'-1"	25'-0"	32'-10"	30'-10"	28'-6"	36'-5"	34'-2"	31'-7"
		20	20	27'-6"	25'-9"	23'-8"	31'-4"	29'-4"	27'-0"	34'-9"	32'-6"	29'-11"
	Snow 115%	25	10	28'-11"	27'-4"	25'-5"	32'-11"	31'-2"	29'-0"	36'-6"	34'-6"	32'-1"
		25	15	27'-7"	26'-0"	24'-1"	31'-5"	29'-7"	27'-5"	34'-10"	32'-9"	30'-4"
		30	10	27'-8"	26'-2"	24'-5"	31'-6"	29'-10"	27'-10"	34'-11"	33'-0"	30'-10"
		30	15	26'-6"	25'-0"	23'-3"	30'-2"	28'-6"	26'-6"	33'-5"	31'-7"	29'-4"
		40	10	25'-2"	24'-1"	22'-9"	28'-8"	27'-6"	26'-0"	31'-9"	30'-5"	28'-9"
		40	15	24'-9"	23'-5"	21'-10"	28'-3"	26'-8"	24'-11"	31'-3"	29'-7"	27'-7"
		50	10	23'-3"	22'-4"	21'-2"	26'-6"	25'-5"	24'-2"	29'-5"	28'-2"	26'-9"
		50	15	23'-3"	22'-2"	20'-9"	26'-6"	25'-3"	23'-8"	28'-7"	27'-8"	26'-2"
19.2" o.c.	Non-Snow 125%	20	10	28'-7"	27'-0"	25'-1"	32'-7"	30'-9"	28'-7"	36'-1"	34'-1"	31'-7"
		20	15	27'-1"	25'-5"	23'-6"	30'-10"	29'-0"	26'-9"	34'-2"	32'-1"	29'-8"
		20	20	25'-10"	24'-2"	22'-3"	29'-5"	27'-7"	25'-4"	32'-7"	30'-6"	28'-1"
	Snow 115%	25	10	27'-2"	25'-8"	23'-11"	30'-11"	29'-3"	27'-3"	34'-3"	32'-5"	30'-2"
		25	15	25'-11"	24'-5"	22'-7"	29'-6"	27'-10"	25'-9"	32'-8"	30'-9"	28'-6"
		30	10	25'-11"	24'-7"	22'-11"	29'-7"	28'-0"	26'-2"	32'-9"	31'-0"	29'-0"
		30	15	24'-11"	23'-6"	21'-10"	28'-4"	26'-9"	24'-10"	31'-5"	29'-8"	27'-6"
		40	10	23'-7"	22'-8"	21'-5"	26'-11"	25'-10"	24'-5"	29'-10"	28'-7"	27'-0"
		40	15	23'-3"	22'-0"	20'-6"	26'-6"	25'-1"	23'-5"	28'-1"	27'-0"	25'-7"
		50	10	21'-10"	21'-0"	19'-11"	24'-11"	23'-11"	22'-8"	25'-10"	25'-3"	24'-5"
		50	15	21'-10"	20'-10"	19'-6"	23'-9"	23'-0"	21'-11"	23'-9"	23'-0"	21'-11"
24" o.c.	Non-Snow 125%	20	10	26'-6"	25'-0"	23'-3"	30'-2"	28'-6"	26'-6"	33'-5"	31'-7"	29'-4"
		20	15	25'-1"	23'-7"	21'-9"	28'-7"	26'-10"	24'-10"	31'-8"	29'-9"	27'-6"
		20	20	23'-11"	22'-5"	20'-7"	27'-3"	25'-6"	23'-6"	30'-2"	28'-3"	26'-0"
	Snow 115%	25	10	25'-2"	23'-9"	22'-2"	28'-8"	27'-1"	25'-3"	31'-9"	30'-0"	28'-0"
		25	15	24'-0"	22'-7"	20'-11"	27'-4"	25'-9"	23'-10"	30'-3"	28'-6"	26'-5"
		30	10	24'-0"	22'-9"	21'-3"	27'-5"	25'-11"	24'-3"	30'-4"	28'-9"	26'-10"
		30	15	23'-0"	21'-9"	20'-2"	26'-3"	24'-9"	23'-0"	27'-4"	26'-1"	24'-5"
		40	10	21'-10"	21'-0"	19'-10"	24'-9"	23'-11"	22'-7"	24'-9"	24'-1"	23'-1"
		40	15	21'-6"	20'-4"	19'-0"	22'-5"	21'-6"	20'-5"	22'-5"	21'-6"	20'-5"
		50	10	20'-2"	19'-5"	18'-5"	20'-8"	20'-2"	19'-6"	20'-8"	20'-2"	19'-6"
		50	15	19'-0"	18'-4"	17'-6"	19'-0"	18'-4"	17'-6"	19'-0"	18'-4"	17'-6"

NOTES

- 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.
  - 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.
  - 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 BC Calc® software.
- Slope roof joists at least ¼:12 to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

Roof Span Tables

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

115% and 125% Load Duration

Condition				BCI® 90 2.0 Joist															
				11⅞"			14"			16"			18"			20"		
O.C. Spacing and 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 8:2	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	38'-5"	36'-3"	33'-8"	43'-7"	41'-2"	38'-2"	48'-4"	45'-7"	42'-3"	50'-0"	49'-9"	46'-2"	50'-0"	50'-0"	50'-0"
		20	15	36'-5"	34'-2"	31'-7"	41'-4"	38'-10"	35'-10"	45'-9"	43'-0"	39'-8"	50'-0"	46'-11"	43'-4"	50'-0"	50'-0"	46'-11"
		20	20	34'-9"	32'-6"	29'-11"	39'-5"	36'-11"	33'-11"	43'-8"	40'-10"	37'-7"	47'-8"	44'-8"	41'-1"	50'-0"	48'-4"	44'-5"
	Snow 115%	25	10	36'-6"	34'-6"	32'-1"	41'-5"	39'-2"	36'-5"	45'-10"	43'-4"	40'-4"	50'-0"	47'-5"	44'-1"	50'-0"	50'-0"	47'-9"
		25	15	34'-10"	32'-9"	30'-4"	39'-6"	37'-2"	34'-5"	43'-9"	41'-2"	38'-2"	47'-10"	45'-0"	41'-8"	50'-0"	48'-8"	45'-1"
		30	10	34'-11"	33'-1"	30'-10"	39'-7"	37'-6"	35'-0"	43'-10"	41'-6"	38'-9"	47'-11"	45'-5"	42'-4"	50'-0"	49'-1"	45'-10"
		30	15	33'-5"	31'-7"	29'-4"	38'-0"	35'-10"	33'-3"	42'-1"	39'-8"	36'-10"	45'-11"	43'-4"	40'-3"	49'-9"	46'-11"	43'-7"
		40	10	31'-9"	30'-5"	28'-9"	36'-0"	34'-7"	32'-8"	39'-11"	38'-3"	36'-2"	43'-7"	41'-10"	39'-6"	47'-2"	45'-3"	42'-9"
		40	15	31'-3"	29'-7"	27'-7"	35'-6"	33'-7"	31'-3"	39'-3"	37'-2"	34'-8"	42'-11"	40'-8"	37'-10"	46'-5"	44'-0"	41'-0"
		50	10	29'-5"	28'-2"	26'-9"	33'-4"	32'-0"	30'-5"	36'-11"	35'-5"	33'-8"	40'-5"	38'-9"	36'-9"	43'-8"	41'-11"	39'-10"
		50	15	29'-5"	28'-0"	26'-2"	33'-4"	31'-9"	29'-8"	36'-11"	35'-3"	32'-11"	40'-5"	38'-6"	36'-0"	43'-8"	41'-8"	38'-11"
16" o.c.	Non-Snow 125%	20	10	34'-10"	32'-10"	30'-6"	39'-6"	37'-4"	34'-7"	43'-9"	41'-4"	38'-4"	47'-10"	45'-2"	41'-11"	50'-0"	48'-10"	45'-4"
		20	15	33'-0"	31'-0"	28'-7"	37'-5"	35'-2"	32'-6"	41'-5"	38'-11"	36'-0"	45'-4"	42'-7"	39'-4"	49'-0"	46'-1"	42'-6"
		20	20	31'-6"	29'-6"	27'-1"	35'-8"	33'-5"	30'-9"	39'-7"	37'-0"	34'-1"	43'-3"	40'-6"	37'-3"	46'-9"	43'-10"	40'-3"
	Snow 115%	25	10	33'-1"	31'-3"	29'-1"	37'-6"	35'-6"	33'-1"	41'-7"	39'-4"	36'-7"	45'-5"	42'-11"	40'-0"	49'-2"	46'-6"	43'-3"
		25	15	31'-6"	29'-8"	27'-6"	35'-9"	33'-8"	31'-3"	39'-8"	37'-4"	34'-7"	43'-4"	40'-10"	37'-9"	46'-10"	44'-2"	40'-11"
		30	10	31'-7"	29'-11"	27'-11"	35'-10"	34'-0"	31'-9"	39'-9"	37'-8"	35'-2"	43'-5"	41'-2"	38'-5"	47'-0"	44'-6"	41'-6"
		30	15	30'-4"	28'-7"	26'-7"	34'-5"	32'-5"	30'-2"	38'-1"	35'-11"	33'-5"	41'-7"	39'-3"	36'-6"	45'-0"	42'-6"	39'-6"
		40	10	28'-9"	27'-7"	26'-1"	32'-7"	31'-4"	29'-7"	36'-2"	34'-8"	32'-9"	39'-6"	37'-11"	35'-10"	42'-9"	41'-0"	38'-9"
		40	15	28'-4"	26'-9"	25'-0"	32'-1"	30'-5"	28'-4"	35'-7"	33'-8"	31'-5"	38'-10"	36'-10"	34'-4"	42'-1"	39'-10"	37'-2"
		50	10	26'-7"	25'-6"	24'-3"	30'-2"	29'-0"	27'-6"	33'-5"	32'-1"	30'-6"	36'-7"	35'-1"	33'-4"	39'-7"	38'-0"	36'-1"
		50	15	26'-7"	25'-4"	23'-9"	30'-2"	28'-9"	26'-11"	33'-5"	31'-11"	29'-10"	36'-7"	34'-10"	32'-7"	39'-7"	37'-8"	35'-3"
19.2" o.c.	Non-Snow 125%	20	10	32'-9"	30'-11"	28'-8"	37'-2"	35'-0"	32'-6"	41'-2"	38'-10"	36'-0"	44'-11"	42'-5"	39'-4"	48'-8"	45'-11"	42'-7"
		20	15	31'-0"	29'-1"	26'-11"	35'-2"	33'-0"	30'-6"	38'-11"	36'-7"	33'-9"	42'-7"	40'-0"	36'-11"	46'-0"	43'-3"	39'-11"
		20	20	29'-6"	27'-8"	25'-5"	33'-6"	31'-5"	28'-11"	37'-2"	34'-9"	32'-0"	40'-7"	38'-0"	35'-0"	43'-11"	41'-2"	37'-10"
	Snow 115%	25	10	31'-1"	29'-5"	27'-4"	35'-3"	33'-4"	31'-1"	39'-0"	36'-11"	34'-5"	42'-8"	40'-4"	37'-7"	46'-2"	43'-8"	40'-8"
		25	15	29'-7"	27'-11"	25'-10"	33'-7"	31'-8"	29'-4"	37'-3"	35'-1"	32'-6"	40'-8"	38'-4"	35'-6"	44'-0"	41'-6"	38'-5"
		30	10	29'-8"	28'-1"	26'-3"	33'-8"	31'-11"	29'-10"	37'-4"	35'-4"	33'-0"	40'-9"	38'-8"	36'-1"	44'-1"	41'-10"	39'-0"
		30	15	28'-5"	26'-10"	24'-11"	32'-3"	30'-6"	28'-4"	35'-9"	33'-9"	31'-4"	39'-1"	36'-11"	34'-3"	42'-3"	39'-11"	37'-1"
		40	10	27'-0"	25'-11"	24'-6"	30'-7"	29'-5"	27'-9"	33'-11"	32'-7"	30'-9"	37'-1"	35'-7"	33'-7"	40'-1"	38'-6"	36'-5"
		40	15	26'-7"	25'-2"	23'-5"	30'-2"	28'-7"	26'-7"	33'-5"	31'-7"	29'-6"	36'-6"	34'-7"	32'-3"	39'-6"	37'-5"	34'-11"
		50	10	24'-11"	24'-0"	22'-9"	28'-4"	27'-2"	25'-10"	31'-5"	30'-2"	28'-8"	34'-4"	32'-11"	31'-4"	37'-1"	35'-8"	33'-10"
		50	15	24'-11"	23'-10"	22'-3"	28'-4"	27'-0"	25'-3"	29'-8"	28'-8"	27'-5"	34'-4"	32'-8"	30'-7"	37'-1"	35'-5"	33'-1"
24" o.c.	Non-Snow 125%	20	10	30'-4"	28'-7"	26'-7"	34'-5"	32'-5"	30'-2"	38'-1"	35'-11"	33'-5"	41'-7"	39'-3"	36'-6"	45'-0"	42'-6"	39'-6"
		20	15	28'-8"	26'-11"	24'-11"	32'-6"	30'-7"	28'-3"	36'-1"	33'-11"	31'-4"	39'-5"	37'-0"	34'-2"	42'-8"	40'-1"	37'-0"
		20	20	27'-4"	25'-7"	23'-7"	31'-0"	29'-1"	26'-9"	34'-4"	32'-2"	29'-8"	37'-7"	35'-2"	32'-5"	40'-8"	38'-1"	35'-1"
	Snow 115%	25	10	28'-9"	27'-2"	25'-4"	32'-7"	30'-10"	28'-9"	36'-2"	34'-2"	31'-10"	39'-6"	37'-4"	34'-10"	42'-9"	40'-5"	37'-8"
		25	15	27'-5"	25'-10"	23'-11"	31'-1"	29'-4"	27'-2"	34'-5"	32'-6"	30'-1"	37'-8"	35'-6"	32'-11"	40'-9"	38'-5"	35'-7"
		30	10	27'-6"	26'-0"	24'-4"	31'-2"	29'-7"	27'-7"	34'-6"	32'-9"	30'-7"	37'-9"	35'-9"	33'-5"	40'-10"	38'-9"	36'-2"
		30	15	26'-4"	24'-10"	23'-1"	29'-10"	28'-2"	26'-3"	33'-1"	31'-3"	29'-1"	36'-2"	34'-2"	31'-9"	39'-2"	37'-0"	34'-4"
		40	10	24'-11"	24'-0"	22'-8"	28'-4"	27'-2"	25'-9"	30'-11"	30'-0"	28'-6"	34'-4"	32'-11"	31'-2"	37'-1"	35'-8"	33'-8"
		40	15	24'-7"	23'-3"	21'-9"	27'-9"	26'-5"	24'-8"	28'-0"	26'-11"	25'-6"	33'-9"	32'-0"	29'-10"	35'-2"	33'-10"	32'-1"
		50	10	23'-1"	22'-2"	21'-1"	25'-7"	24'-11"	23'-11"	25'-9"	25'-2"	24'-4"	31'-3"	30'-6"	29'-0"	32'-5"	31'-8"	30'-7"
		50	15	23'-1"	22'-0"	20'-7"	23'-6"	22'-9"	21'-8"	23'-8"	22'-11"	21'-10"	28'-9"	27'-10"	26'-7"	29'-10"	28'-10"	27'-6"

NOTES

- 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.
  - — 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.
  - — assume minimum bearing lengths without web stiffeners for joist depths of 16" and less.
- All 18" and 20" BCI® joists require web stiffeners.
- 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.
- Slope roof joists at least ¼:12 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 3½:12 or less. For steeper slopes, see pages 15–18.

Span Length	BCI® 5000 1.7 Joist								
	9½"			11⅞"			14"		
	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection
	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'	154	167	–	169	183	–	176	191	–
13'	131	142	–	156	169	–	162	177	–
14'	113	123	110	144	157	–	151	164	–
15'	98	107	90	126	137	–	141	153	–
16'	86	94	75	110	120	–	131	142	–
17'	76	82	63	98	106	–	116	126	–
18'	68	70	53	87	95	–	103	112	–
19'	59	59	45	78	85	74	93	101	–
20'	51	51	39	71	77	64	84	91	–
21'				64	70	55	76	83	–
22'				58	63	48	69	75	–
23'				53	55	42	63	69	62
24'							58	63	55
25'							53	58	49
26'									
27'									
28'									

NOTES

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values 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 Deflection 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.
- Slope roof joists at least ¼:12 to minimize ponding.
- 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.
- 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.

Roof Load Tables

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 3½:12 or less. For steeper slopes, see pages 15–18.

Span Length	BCI® 6000 1.8 Joist											
	9½"			11⅞"			14"			16"		
	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection
	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	159	173	188	–	180	196	–	183	199	–
14'	145	158	129	161	175	–	167	182	–	170	185	–
15'	126	137	106	150	163	–	156	169	–	159	173	–
16'	111	115	88	140	153	–	146	159	–	149	162	–
17'	97	97	74	126	137	122	137	149	–	140	152	–
18'	82	82	63	112	122	103	130	141	–	132	144	–
19'	70	70	53	101	110	89	120	130	–	125	136	–
20'	60	60	46	91	99	76	108	117	–	119	129	–
21'	52	52	40	83	87	66	98	107	97	112	122	–
22'				75	76	58	89	97	85	102	111	–
23'				67	67	51	82	89	75	93	101	–
24'				59	59	45	75	81	66	86	93	–
25'				52	52	40	69	75	58	79	86	78
26'							64	68	52	73	79	70
27'							59	61	47	67	73	63
28'							55	55	42	63	68	56

NOTES

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values 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 Deflection 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.
- Slope roof joists at least ¼:12 to minimize ponding.
- 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.
- 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.

Roof Load Tables

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 3½:12 or less. For steeper slopes, see pages 15–18.

Span Length	BCI® 6500 1.8 Joist											
	9½"			11⅞"			14"			16"		
	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection
	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	141	161	175	–	167	182	–	170	185	–
15'	140	152	116	150	163	–	156	169	–	159	173	–
16'	123	126	97	140	153	–	146	159	–	149	162	–
17'	106	106	81	132	144	–	137	149	–	140	152	–
18'	90	90	69	125	135	114	130	141	–	132	144	–
19'	77	77	59	112	122	97	123	134	–	125	136	–
20'	66	66	51	101	110	84	117	127	–	119	129	–
21'	57	57	44	91	95	73	108	118	106	113	123	–
22'	50	50	38	83	83	64	99	107	92	108	118	–
23'				73	73	56	90	98	81	103	112	–
24'				64	64	49	83	90	72	95	103	–
25'				57	57	44	76	83	64	87	95	85
26'				51	51	39	71	74	57	81	88	76
27'							65	67	51	75	81	68
28'							60	60	46	69	76	61
29'							54	54	41	65	70	55
30'										60	66	50
31'										57	60	45
32'										53	54	41
33'										50	50	38
34'												
35'												

NOTES

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values 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 Deflection 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.
- Slope roof joists at least ¼:12 to minimize ponding.
- 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.
- 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.

Roof Load Tables

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 3½:12 or less. For steeper slopes, see pages 15–18.

	BCI® 60 2.0 Joist								
	11⅞"			14"			16"		
	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection
Span Length	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	–
7'	354	385	–	354	385	–	354	385	–
8'	309	336	–	309	336	–	309	336	–
9'	275	299	–	275	299	–	275	299	–
10'	247	269	–	247	269	–	247	269	–
11'	225	245	–	225	245	–	225	245	–
12'	206	224	–	206	224	–	206	224	–
13'	190	207	–	190	207	–	190	207	–
14'	177	192	–	177	192	–	177	192	–
15'	165	179	–	165	179	–	165	179	–
16'	154	168	–	154	168	–	154	168	–
17'	145	158	–	145	158	–	145	158	–
18'	137	149	–	137	149	–	137	149	–
19'	130	141	118	130	141	–	130	141	–
20'	123	133	102	123	134	–	123	134	–
21'	116	116	88	118	128	–	118	128	–
22'	101	101	77	112	122	–	112	122	–
23'	89	89	68	107	117	99	107	117	–
24'	79	79	60	103	112	88	103	112	–
25'	70	70	53	99	102	78	99	107	–
26'	62	62	47	91	91	69	95	103	93
27'	56	56	42	81	81	62	91	99	84
28'	50	50	38	73	73	56	88	96	75
29'				66	66	50	85	89	68
30'				60	60	46	81	81	61
31'				54	54	41	73	73	56
32'							67	67	51
33'							61	61	46
34'							56	56	43
35'							51	51	39

NOTES

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values 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 Deflection 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.
- Slope roof joists at least ¼:12 to minimize ponding.
- 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.
- 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.

Roof Load Tables

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 3½:12 or less. For steeper slopes, see pages 15–18.

Span Length	BCI® 90 2.0 Joist														
	11⅞"			14"			16"			18"			20"		
	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection	Total Load		Deflection
	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'	507	551	–	510	555	–	514	559	–	623	677	–	646	702	–
7'	434	472	–	437	476	–	441	479	–	534	581	–	553	602	–
8'	380	413	–	383	416	–	385	419	–	467	508	–	484	526	–
9'	338	367	–	340	370	–	343	372	–	415	451	–	430	468	–
10'	304	330	–	306	333	–	308	335	–	374	406	–	387	421	–
11'	276	300	–	278	302	–	280	305	–	340	369	–	352	383	–
12'	253	275	–	255	277	–	257	279	–	311	338	–	323	351	–
13'	234	254	–	235	256	–	237	258	–	287	312	–	298	324	–
14'	217	236	–	218	238	–	220	239	–	267	290	–	276	301	–
15'	202	220	–	204	222	–	205	223	–	249	271	–	258	280	–
16'	190	206	–	191	208	–	192	209	–	233	254	–	242	263	–
17'	178	194	–	180	196	–	181	197	–	220	239	–	228	247	–
18'	169	183	–	170	185	–	171	186	–	207	225	–	215	234	–
19'	160	174	–	161	175	–	162	176	–	196	214	–	204	221	–
20'	152	165	148	153	166	–	154	167	–	187	203	–	193	210	–
21'	144	157	129	145	158	–	147	159	–	178	193	–	184	200	–
22'	138	148	113	139	151	–	140	152	–	170	184	–	176	191	–
23'	130	130	100	133	144	–	134	145	–	162	176	–	168	183	–
24'	115	115	88	127	138	126	128	139	–	155	169	–	161	175	–
25'	103	103	78	122	133	112	123	134	–	149	162	–	155	168	–
26'	92	92	70	117	128	100	118	129	–	143	156	–	149	162	–
27'	82	82	63	113	118	90	114	124	–	138	150	–	143	156	–
28'	74	74	56	106	106	81	110	119	109	133	145	–	138	150	–
29'	67	67	51	96	96	73	106	115	98	129	140	127	133	145	–
30'	60	60	46	87	87	67	102	111	89	124	135	115	129	140	–
31'	55	55	42	79	79	60	99	106	81	120	131	105	125	135	–
32'	50	50	38	72	72	55	96	97	74	116	125	96	121	131	120
33'				66	66	50	89	89	68	113	114	88	117	127	110
34'				60	60	46	81	81	62	105	105	80	114	123	101
35'				56	56	42	75	75	57	97	97	74	110	120	93

NOTES

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values 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 Deflection 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.
- All 18" and 20" BCI® joists require web stiffeners.
- Slope roof joists at least ¼:12 to minimize ponding.
- 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.
- 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.
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BCI Joist Design Properties

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)
5000 1.7	9½"	2.0	2460	160	5.0	1475	950	1125	1125	1275	2100	2350	2525	2750
	11⅞"	2.3	3150	265	6.0	1625	950	1425	1425	1475	2250	2850	2525	3000
	14"	2.5	3735	390	8.0	1825	950	1525	1475	1725	2350	3050	2525	3200
6000 1.8	9½"	2.2	3165	190	5.0	1575	1175	1375	1375	1425	2400	2650	2700	2750
	11⅞"	2.5	4060	320	6.0	1675	1175	1425	1425	1475	2500	2850	2900	3000
	14"	2.7	4815	470	8.0	1925	1175	1525	1525	1725	2600	3150	2925	3200
	16"	2.9	5495	635	9.0	2175	1175	1625	1550	1975	2650	3350	2950	3350
6500 1.8	9½"	2.3	3505	210	5.0	1575	1175	1375	1375	1425	2400	2650	2700	2750
	11⅞"	2.6	4495	350	7.0	1675	1175	1425	1425	1475	2500	2850	2900	3000
	14"	3.0	5330	515	8.0	1925	1175	1525	1525	1725	2600	3150	2925	3200
	16"	3.2	6085	695	9.0	2175	1175	1625	1550	1975	2650	3350	2950	3350
60 2.0	11⅞"	2.9	6235	430	7.0	1675	1175	1425	1425	1475	2750	2850	3200	3250
	14"	3.1	7440	635	8.0	1925	1175	1525	1525	1725	2750	3450	3200	3650
	16"	3.3	8520	860	9.0	2175	1175	1625	1550	1975	2750	3650	3200	3750
90 2.0	11⅞"	3.9	9550	645	7.0	2150	1425	1850	1800	1950	3375	3700	4000	4300
	14"	4.1	11390	940	8.0	2350	1450	1950	1850	2150	3400	3850	4100	4450
	16"	4.4	13050	1275	9.0	2550	1475	2150	1900	2350	3425	4000	4200	4650
	18"	4.6	14690	1660	10.0	2750	N/A(3)	2300	N/A(3)	2550	N/A(3)	4150	N/A(3)	4750
	20"	4.8	16310	2100	11.0	2850	N/A(3)	2500	N/A(3)	2650	N/A(3)	4300	N/A(3)	4850

(1) No web stiffeners required.

(2) Web stiffeners required.

(3) All 18" and 20" BCI® joists require web stiffeners.

NOTES

- 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.

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

Δ = deflection (in)
w = uniform load (lb/in)
l = clear span (in)
EI = bending stiffness (lb-in^2)
K = shear deformation coefficient (lb)

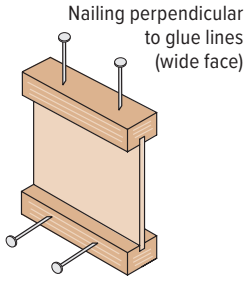
Code Evaluation Report: ICC-ES®/APA® ESR-1336 (IBC®, IRC®)

Closest Allowable Nail Spacing

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 Box (0.113"ø x 2.5")	2"	1½"	4"	1½"
8d Common (0.131"ø x 2.5")	2"	1½"	4"	3"
10d & 12d Box (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 and 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"

NOTES

- If more than one row of nails is used, the rows must be offset at least ½".
- Connectors that mount to sides of flanges (such as Simpson Strong-Tie A35) may only be used on BCI® 60 and 90 joist flanges. 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) (3)	
	Unblocked	Blocked
5000	As permitted for 2x framing in building code	320 lb/ft for 6" o.c. nailing at panel edges
		425 lb/ft for 4" o.c. nailing, staggered, at panel edges
6000, 6500	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
60, 90	As permitted for 3x framing in building code	As permitted for 3x framing in building code not to exceed 690 lb/ft.

NOTES

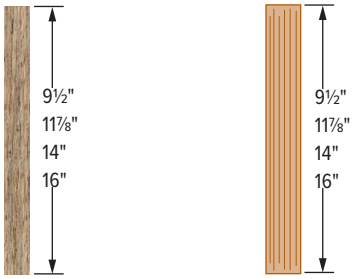
(1) See ICC-ES®/APA® ESR-1336, Table 7.

(2) As noted in table, BCI® joists may be substituted for solid sawn framing in horizontal wood diaphragms as shown in ANSI/AWC SDPWS, Tables 4.2A and 4.2C (referenced in IBC).

(3) Diaphragm nailing shall not exceed the limits of BCI® joist closest allowable nail spacing.

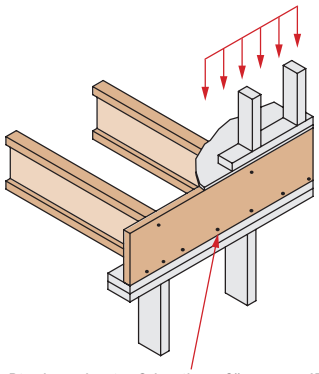
Rim Board Details and Properties

Rim Board Product Profiles



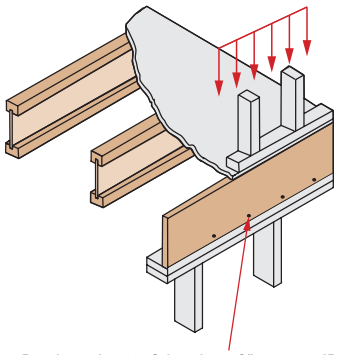
*18 inch and 20 inch deep rimboard are special order products, contact local supplier or Boise Cascade representative for product availability.

F07 Perpendicular



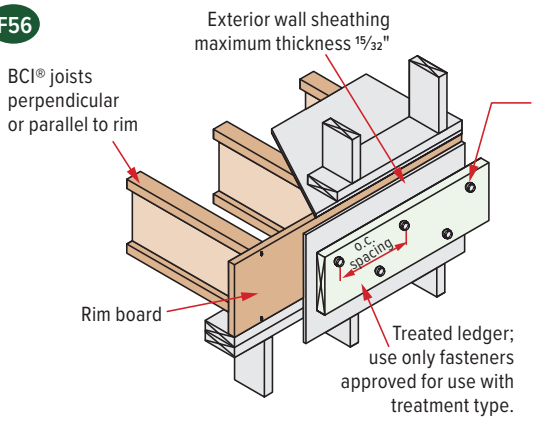
- Rim board: min. 8d nails at 6" o.c. per IRC. Connection per design professional of record's specification for shear transfer.
- See table for vertical load capacity

F07A Parallel



- Rim board: 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

½" diameter through bolts (ASTM A307 Grades A & B, SAE J429 Grades 1 or 2, or higher with washer and nuts) or ½" diameter lag screws (full penetration), staggered.

Minimum connection for 40/10 psf deck loading:

Deck Joist Length	Connection
12'-0" and less	2 rows ½" bolts or lag screws, 24" o.c. (300 PLF max.)
12'-1" to 18'-0"	2 rows ½" bolts or lag screws, 16" o.c. (450 PLF max.)

For snow loads greater than 40 psf and/or dead loads greater than 10 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*.

Rim Board Properties

Product	Vertical Load Capacity				Maximum Floor Diaphragm Lateral Capacity (lb/ft)	Specific Gravity for Lateral Nail Design	Allowable Design Values			
	Uniform (PLF)		Point (lb)				Flexural Stress (lb/in²)	Modulus of Elasticity—True (lb/in²)	Horizontal Shear (lb/in²)	Compression Perpendicular to Grain (lb/in²)
	16" Depth & Less	18" & 20" Depth	16" Depth & Less	18" & 20" Depth						
1⅛" Boise Cascade® Rimboard OSB (C1)[1]	4,850	4,150	3,500	3,500	180	0.5	Limited span capabilities, see publication in note 1			
1⅝" Versa-Lam® LVL 1.5E 1800[1]	6,000	5,450	4,450	4,450	Permitted per building code for all nominal 2" thick framing blocked and unblocked diaphragms (4" nail spacing and eater)	0.5	1,800	1,500,000	225	525

(1) Rim board grade C1 per APA Form 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)

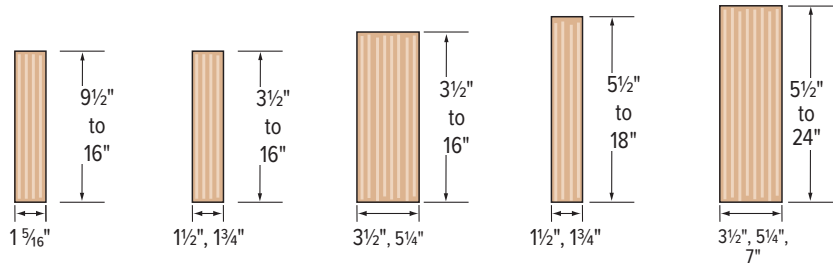
Nail Size	1⅛" Boise Cascade® Rimboard OSB[1]	Versa-Lam® LVL 1⅝"Rim Board[2]
8d box (0.113"ø x 2.5")	3"	3
8d common (0.131"ø x 2.5")	3"	3
10d and 12d box (0.128"ø x 3", 3.25")	See publication listed in note (1) for additional nailing information.	3
16d box (0.135"ø x 3.5")		3
10d and 12d common and 16d sinker (0.148"ø x 3", 3.25")		4
16d common (0.162"ø x 3.5")		6

(1) See *Performance Rated Rim Boards*, APA Form #W345 for more product information.
(2) See ICC-ES/APA ESR-1040 for more information.

Versa-Lam LVL Product Profiles

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 ICC-ES/APA evaluation report.



Versa-Lam® LVL 1.5E 1800 | **Versa-Lam® LVL 1.8E 2400** | **Versa-Lam® LVL 1.8E 2650** | **Versa-Lam® LVL 2.1E 2800** | **Versa-Lam® LVL 2.1E 3100**

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

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 all 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.

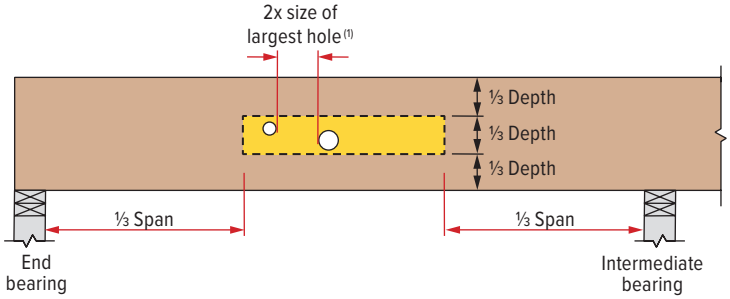
Fabrication — Versa-Lam® LVL beams shall be manufactured in a plant evaluated for fabrication by the governing code evaluation service and under the supervision of a third-party inspection agency listed by the corresponding evaluation service.

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.

Versa-Lam LVL Allowable Holes



Allowable Round Holes

Table valid only for beams supporting uniform load.

Beam Depth	Max. Hole Diameter
5½" to less than 7¼"	¾"
7¼" to less than 9¼"	1"
9¼" to less than 18"	2"
18" to less than 24"	3"
24"	4"

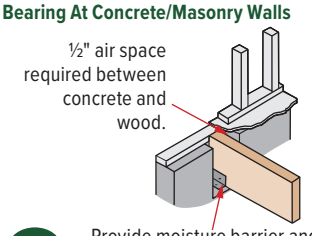
NOTES

(1) The horizontal distance between adjacent holes must be at least two times the diameter of the larger hole. This restriction also applies to the location of holes relative to bolt holes in multiple ply beams. Holes shall not be stacked vertically.

- 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 table 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 EWP Engineering.

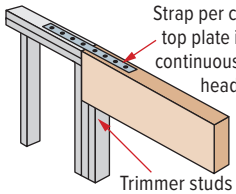
Versa-Lam LVL Beam Details

Bearing At Concrete/Masonry Walls



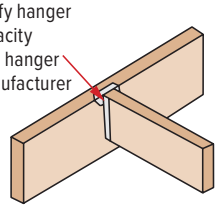
B01

Bearing For Door Or Window Header



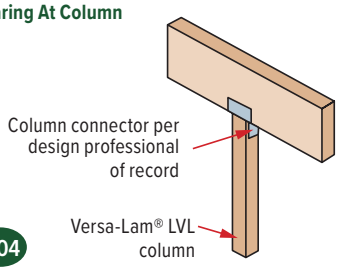
B02

Beam To Beam Connector



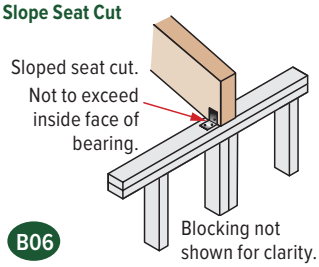
B03

Bearing At Column



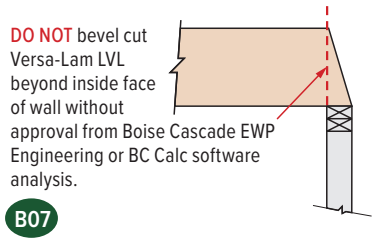
B04

Slope Seat Cut



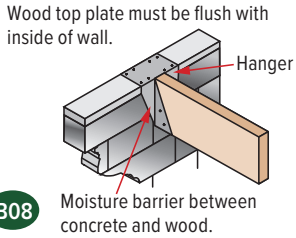
B06

Bevel Cut



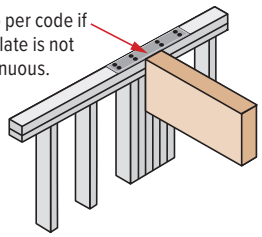
B07

Beam To Concrete/Masonry Walls



B08

Bearing Framing Into Wall



B09

NOTES

- Minimum of ½" air space between beam and wall pocket or 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.
- 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).

Versa-Lam LVL Beam Multiple Member Connections

Side-Loaded Applications — *Maximum uniform side load (PLF)*

Number of Plies	Nailed[3]		½" Dia. Through Bolt[1]			⅝" Dia. Through Bolt[1]		
	2 Rows 16d Sinkers @ 12" o.c.[5]	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
1¾" Versa-Lam® LVL (Depths of 18" and less)								
2	470	705	505	1,010	2,020	560	1,120	2,245
3[2]	350	525	375	755	1,515	420	840	1,685
4[4]	Use bolt schedule		335	670	1,345	370	745	1,495
3½" Versa-Lam® LVL								
2[4]	Use bolt schedule		855	1,715	N/A	1,125	2,250	N/A

Number of Plies	Nailed[3]		½" Dia. Through Bolt[1]			⅝" Dia. Through Bolt[1]		
	3 Rows 16d Sinkers @ 12" o.c.	4 Rows 16d Sinkers @ 12" o.c.	3 Rows @ 24" o.c. 8" 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
1¾" Versa-Lam® LVL (Depths of 24" and less)								
2	705	940	755	1,010	1,515	840	1,120	1,685
3[2]	525	705	565	755	1,135	630	840	1,260
4[4]	Use bolt schedule		505	670	1,010	560	745	1,120

Top-Loaded Applications — *For top-loaded beams and beams with side loads less than those shown in table above.*

Plies	Depth	Number of Rows	Fastening[1] [3]	Maximum Uniform Load From One Side
Two 1¾" plies	Depths 11⅞" & less	2	16d box/sinker nails @ 12" o.c.	400 PLF
	Depths 14"- 18"	3		600 PLF
	Depth = 24"	4		800 PLF
Three 1¾" plies [2]	Depths 11⅞" & less	2		300 PLF
	Depths 14"-18"	3		450 PLF
	Depth = 24"	4		600 PLF
Four 1¾" plies	Depths 18" & less	2	2 rows ½" bolts @ 24" o.c., staggered	335 PLF
	Depth = 24"	3	3 rows ½" bolts @ 24" o.c., staggered every 8"	505 PLF
Two 3½" plies	Depths 18" & less	2	2 rows ½" bolts @ 24" o.c., staggered	855 PLF
	Depth 20"- 24"	3	3 rows ½" bolts @ 24" o.c., staggered every 8"	1,285 PLF

(1) Design values apply to common bolts that conform to ANSI/ASME standard B18.21-1981 (ASTM A307 Grades A&B, SAE J429 Grades 1 or 2, or higher). A washer not less than a standard cut 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 ½" bolts and 2½" for ⅝" bolts. Bolt holes shall be the same diameter as the bolt.
(2) The nail schedules shown apply to both sides of a 3-ply beam.
(3) 16d box nails = 0.135" diameter x 3.5" length,
16d sinker nails = 0.148" diameter x 3.25" length.
(4) When side-loaded, 7" wide beams must be properly braced to prevent rotation.
(5) 14" and deeper 1¾" beams require minimum 3 rows of nails.

NOTES

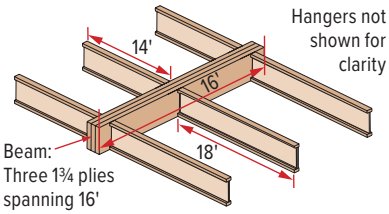
- Beams wider than 7" must be designed by the engineer of record.
- All values in these tables may be increased by 15% for snow-load roofs and by 25% for non-snow load roofs where the building code allows.
- Use allowable load tables or BC Calc® software to size beams.
- An equivalent specific gravity of 0.5 may be used when designing specific connections with Versa-Lam® LVL.
- Connection values are based upon the NDS, 2018 Edition.
- FastenMaster TrussLOK®, Simpson Strong-Tie SDW or SDS, and MiTek WS screws may also be used to connect multiple member Versa-Lam® LVL beams. Contact Boise Cascade EWP Engineering for more information.

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 with a 16'-0" span *(shown above)* supports a residential floor load (40 psf live load, 10 psf dead load). Beam depth is limited to 14".



Find: A beam of multiple 1¾" 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 beam is supporting:
   14'/2 + 18'/2 = **16 ft. tributary width**
   Live Load: 40 psf * 16 ft. = **640 PLF**
   Dead Load: 10 psf x 16 ft. = **160 PLF**
   Total Load: 640 PLF + 160 PLF = **800 PLF**
2. Use PLF table on page 28 or BC Calc® software to size the beam.
   A 3-ply Versa-Lam® LVL 1¾" 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) x (40 + 10 psf) = 450 PLF
4. See the Side-Loaded Applications table (at left) for 1¾" Versa-Lam® LVL, 3 plies.
5. The proper connection schedule must have a capacity greater than the maximum side load:
   Nailed: 3 rows 16d sinkers at 12" o.c:
   525 PLF is greater than 450 PLF ***OK***
   Bolts: ½" diameter 2 rows at 12" staggered:
   755 PLF is greater than 450 PLF ***OK***

Versa-Lam LVL Beam Floor Load Table

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

Versa-Lam® LVL 2.1E 2800 and 2.1E 3100
(100% Load Duration)

Beam Span	1¾" Versa-Lam® LVL 2.1E 2800						3½" Versa-Lam® LVL 2.1E 3100						5¼" Versa-Lam® LVL 2.1E 3100						7" Versa-Lam® LVL 2.1E 3100					
	Beam Depth						Beam Depth						Beam Depth						Beam Depth					
	7¼"	9½"	11⅞"	14"	16" (1)	18" (1)	7¼"	9½"	11⅞"	14"	16"	18"	9½"	11⅞"	14"	16"	18"	20"	11⅞"	14"	16"	18"	20"	24"
6'	763	1,063	1,425	1,796	2,194	2,398	1,526	2,127	2,850	3,591	4,388	4,796	3,190	4,275	5,387	6,583	7,194	7,192	5,700	7,183	8,777	9,593	9,589	9,582
	693	–	–	–	–	–	1,385	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1.8 / 4.4	2.4 / 6.1	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	1.8 / 4.4	2.4 / 6.1	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	2.4 / 6.1	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	5.5 / 13.8	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
7'	614	877	1,161	1,445	1,742	2,054	1,272	1,754	2,322	2,889	3,484	4,109	2,632	3,483	4,334	5,226	6,163	6,161	4,644	5,778	6,967	8,218	8,214	8,207
	452	–	–	–	–	–	905	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1.6 / 4.1	2.4 / 5.9	3.1 / 7.8	3.9 / 9.7	4.7 / 11.7	5.5 / 13.8	1.7 / 4.3	2.4 / 5.9	3.1 / 7.8	3.9 / 9.7	4.7 / 11.7	5.5 / 13.8	2.4 / 5.9	3.1 / 7.8	3.9 / 9.7	4.7 / 11.7	5.5 / 13.8	5.5 / 13.8	3.1 / 7.8	3.9 / 9.7	4.7 / 11.7	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
8'	462	746	979	1,208	1,444	1,702	925	1,493	1,958	2,416	2,887	3,404	2,239	2,938	3,624	4,331	5,106	5,387	3,917	4,832	5,775	6,808	7,183	7,176
	310	660	–	–	–	–	621	1,321	–	–	–	–	1,981	–	–	–	–	–	–	–	–	–	–	–
	1.5 / 3.5	2.3 / 5.7	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	1.5 / 3.5	2.3 / 5.7	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	2.3 / 5.7	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	5.5 / 13.8	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	5.5 / 13.8	5.5 / 13.8
9'	329	618	846	1,038	1,232	1,443	659	1,299	1,693	2,076	2,465	2,886	1,948	2,539	3,113	3,697	4,328	4,786	3,386	4,151	4,930	5,771	6,381	6,374
	222	477	–	–	–	–	444	954	–	–	–	–	1,431	–	–	–	–	–	–	–	–	–	–	–
	1.5 / 3	2.1 / 5.3	2.9 / 7.3	3.6 / 8.9	4.3 / 10.6	5 / 12.4	1.5 / 3	2.2 / 5.6	2.9 / 7.3	3.6 / 8.9	4.3 / 10.6	5 / 12.4	2.2 / 5.6	2.9 / 7.3	3.6 / 8.9	4.3 / 10.6	5 / 12.4	5.5 / 13.8	2.9 / 7.3	3.6 / 8.9	4.3 / 10.6	5 / 12.4	5.5 / 13.8	5.5 / 13.8
10'	242	500	745	909	1,075	1,252	485	1,056	1,491	1,819	2,150	2,504	1,584	2,236	2,728	3,225	3,756	4,304	2,981	3,638	4,299	5,008	5,739	5,732
	164	355	660	–	–	–	327	710	1,321	–	–	–	1,065	1,981	–	–	–	–	2,642	–	–	–	–	–
	1.5 / 3	1.9 / 4.8	2.9 / 7.1	3.5 / 8.7	4.1 / 10.3	4.8 / 12	1.5 / 3	2 / 5.1	2.9 / 7.1	3.5 / 8.7	4.1 / 10.3	4.8 / 12	2 / 5.1	2.9 / 7.1	3.5 / 8.7	4.1 / 10.3	4.8 / 12	5.5 / 13.8	2.9 / 7.1	3.5 / 8.7	4.1 / 10.3	4.8 / 12	5.5 / 13.8	5.5 / 13.8
11'	183	402	630	809	953	1,105	366	804	1,331	1,618	1,906	2,211	1,205	1,997	2,428	2,858	3,316	3,803	2,662	3,237	3,811	4,422	5,071	5,207
	124	271	508	798	–	–	248	541	1,015	1,595	–	–	812	1,523	2,393	–	–	–	2,031	3,190	–	–	–	–
	1.5 / 3	1.7 / 4.3	2.7 / 6.7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	1.5 / 3	1.7 / 4.3	2.8 / 7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	1.7 / 4.3	2.8 / 7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	5.4 / 13.4	2.8 / 7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	5.4 / 13.4	5.5 / 13.8
12'	141	312	528	722	856	989	282	624	1,171	1,457	1,711	1,979	937	1,757	2,186	2,567	2,968	3,393	2,343	2,915	3,422	3,958	4,524	4,769
	96	211	398	629	–	–	193	422	796	1,258	–	–	633	1,194	1,887	–	–	–	1,592	2,517	–	–	–	–
	1.5 / 3	1.5 / 3.6	2.4 / 6.1	3.3 / 8.3	3.9 / 9.9	4.6 / 11.4	1.5 / 3	1.5 / 3.6	2.7 / 6.8	3.4 / 8.4	3.9 / 9.9	4.6 / 11.4	1.5 / 3.6	2.7 / 6.8	3.4 / 8.4	3.9 / 9.9	4.6 / 11.4	5.2 / 13	2.7 / 6.8	3.4 / 8.4	3.9 / 9.9	4.6 / 11.4	5.2 / 13	5.5 / 13.8
13'	111	247	449	614	776	895	222	494	942	1,325	1,552	1,791	741	1,413	1,988	2,328	2,686	3,062	1,884	2,651	3,104	3,581	4,083	4,399
	76	168	318	504	728	–	152	335	635	1,009	1,456	–	503	953	1,513	2,185	–	–	1,270	2,017	2,913	–	–	–
	1.5 / 3	1.5 / 3.1	2.3 / 5.6	3.1 / 7.7	3.9 / 9.7	4.5 / 11.2	1.5 / 3	1.5 / 3.1	2.4 / 5.9	3.3 / 8.3	3.9 / 9.7	4.5 / 11.2	1.5 / 3.1	2.4 / 5.9	3.3 / 8.3	3.9 / 9.7	4.5 / 11.2	5.1 / 12.7	2.4 / 5.9	3.3 / 8.3	3.9 / 9.7	4.5 / 11.2	5.1 / 12.7	5.5 / 13.8
14'	89	198	380	529	682	817	177	397	761	1,172	1,420	1,635	595	1,141	1,759	2,130	2,452	2,789	1,522	2,345	2,840	3,270	3,719	4,082
	61	135	257	410	594	–	123	270	514	820	1,189	–	405	771	1,230	1,783	–	–	1,029	1,640	2,378	–	–	–
	1.5 / 3	1.5 / 3	2.1 / 5.1	2.9 / 7.1	3.7 / 9.2	4.4 / 11	1.5 / 3	1.5 / 3	2.1 / 5.1	3.2 / 7.9	3.8 / 9.6	4.4 / 11	1.5 / 3	2.1 / 5.1	3.2 / 7.9	3.8 / 9.6	4.4 / 11	5 / 12.5	2.1 / 5.1	3.2 / 7.9	3.8 / 9.6	4.4 / 11	5 / 12.5	5.5 / 13.8
15'	72	162	311	460	593	741	143	323	622	1,000	1,309	1,504	485	934	1,500	1,963	2,256	2,561	1,245	2,000	2,617	3,008	3,415	3,807
	50	111	211	338	491	680	100	221	422	675	982	1,359	332	633	1,013	1,473	2,039	–	844	1,350	1,964	2,718	–	–
	1.5 / 3	1.5 / 3	1.8 / 4.5	2.7 / 6.7	3.4 / 8.6	4.3 / 10.7	1.5 / 3	1.5 / 3	1.8 / 4.5	2.9 / 7.2	3.8 / 9.5	4.3 / 10.9	1.5 / 3	1.8 / 4.5	2.9 / 7.2	3.8 / 9.5	4.3 / 10.9	4.9 / 12.3	1.8 / 4.5	2.9 / 7.2	3.8 / 9.5	4.3 / 10.9	4.9 / 12.3	5.5 / 13.8
16'	59	133	257	403	520	651	117	266	515	830	1,153	1,392	399	772	1,246	1,730	2,088	2,367	1,030	1,661	2,306	2,784	3,156	3,566
	41	92	175	281	410	569	83	183	350	562	820	1,138	275	526	843	1,230	1,707	2,279	701	1,124	1,640	2,277	3,038	–
	1.5 / 3	1.5 / 3	1.6 / 4	2.5 / 6.2	3.2 / 8	4 / 10	1.5 / 3	1.5 / 3	1.6 / 4	2.6 / 6.4	3.6 / 8.9	4.3 / 10.7	1.5 / 3	1.6 / 4	2.6 / 6.4	3.6 / 8.9	4.3 / 10.7	4.9 / 12.2	1.6 / 4	2.6 / 6.4	3.6 / 8.9	4.3 / 10.7	4.9 / 12.2	5.5 / 13.8
17'		111	215	348	460	575	97	221	430	696	1,020	1,276	332	645	1,044	1,530	1,914	2,200	861	1,393	2,040	2,552	2,933	3,354
		77	147	236	346	481	69	153	294	473	691	962	230	441	709	1,037	1,443	1,931	588	945	1,382	1,924	2,575	–
		1.5 / 3	1.5 / 3.6	2.3 / 5.7	3 / 7.6	3.8 / 9.4	1.5 / 3	1.5 / 3	1.5 / 3.6	2.3 / 5.7	3.3 / 8.4	4.2 / 10.5	1.5 / 3	1.5 / 3.6	2.3 / 5.7	3.3 / 8.4	4.2 / 10.5	4.8 / 12	1.5 / 3.6	2.3 / 5.7	3.3 / 8.4	4.2 / 10.5	4.8 / 12	5.5 / 13.8
18'		93	181	295	409	512	81	186	363	589	867	1,136	279	544	884	1,301	1,704	2,055	726	1,178	1,735	2,273	2,740	3,165
		65	124	201	294	410	58	130	249	401	588	820	194	373	602	882	1,230	1,650	498	802	1,176	1,640	2,200	–
		1.5 / 3	1.5 / 3.2	2.1 / 5.2	2.9 / 7.1	3.6 / 8.9	1.5 / 3	1.5 / 3	1.5 / 3.2	2.1 / 5.2	3 / 7.6	4 / 9.9	1.5 / 3	1.5 / 3.2	2.1 / 5.2	3 / 7.6	4 / 9.9	4.8 / 11.9	1.5 / 3.2	2.1 / 5.2	3 / 7.6	4 / 9.9	4.8 / 11.9	5.5 / 13.8
19'		79	154	251	367	459	68	157	308	502	741	1,018	236	462	753	1,112	1,527	1,866	617	1,004	1,483	2,036	2,488	2,996
		55	106	172	252	352	50	110	213	343	504	704	166	319	515	756	1,056	1,420	425	686	1,008	1,408	1,893	–
		1.5 / 3	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.4 / 8.5	1.5 / 3	1.5 / 3	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.7 / 9.4	1.5 / 3	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.7 / 9.4	4.6 / 11.4	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.7 / 9.4	4.6 / 11.4	5.5 / 13.8
20'		67	132	216	319	413	57	134	264	431	638	897	201	396	647	957	1,346	1,682	528	862	1,276	1,794	2,242	2,844
		47	92	148	217	304	43	95	183	296	435	609	142	275	444	652	913	1,230	366	592	870	1,218	1,640	2,718
		1.5 / 3	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.2 / 8	1.5 / 3	1.5 / 3	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.5 / 8.7	1.5 / 3	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.5 / 8.7	4.3 / 10.8	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.5 / 8.7	4.3 / 10.8	5.5 / 13.8
22'			98	162	241	340		99	197	324	481	680	148	295	485	722	1,019	1,383	394	647	962	1,359	1844	2,582
			69	112	165	232		72	138	224	330	464	107	208	336	496	696	940	277	448	661	928	1,253	2,091
			1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3		1.5 / 3	1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3	1.5 / 3	1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3	3.9 / 9.8	1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3	3.9 / 9.8	5.5 / 13.8
24'			75	124	185	263		74	150	248	371	526	112	225	372	556	788	1,073	300	496	741	1,051	1,431	2,189
			54	87	128	181		55	107	174	257	361	83	161	261	385	542	733	214	348	513	722	978	1,640
			1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2		1.5 / 3	1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2	1.5 / 3	1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2	3.4 / 8.4	1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2	3.4 / 8.4	5.1 / 12.8
26'			58	97	145	207		57	116	194	290	413	85	174	290	436	620	847	232	387	581	827	1,130	1,859
			42	69	102	143		44	85	137	203	286	65	127	206	305	430	583	169	275	407	573	777	1,308
			1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3		1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3	2.9 / 7.2	1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3	2.9 / 7.2	4.7 / 11.8
28'				77	116	165			91	153	231	330	66	137	230	347	495	679	182	306	462	660	905	1,547
				55	82	115			68	110	164	231	53	102	166	245	346	470	136	221	327	462	627	1,060
				1.5 / 3	1.5 / 3.3	1.8 / 4.6			1.5 / 3	1.5 / 3	1.5 / 3.3	1.8 / 4.6	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.3	1.8 / 4.6	2.5 / 6.3	1.5 / 3	1.5 / 3	1.5 / 3.3	1.8 / 4.6	2.5 / 6.3	4.2 / 10.6
30'				61	93	133			72	123	186	267	51	109	184	279	400	551	145	245	372	534	734	1,262
				45	67	94			55	90	134	189	43	83	135	200	283	385	111	180	267	378	513	870
				1.5 / 3	1.5 / 3	1.6 / 4			1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	2.2 / 5.5	1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	2.2 / 5.5	3.7 / 9.3

(1) 1¾ inch members deeper than 14" are to be used as multiple-member beams only..

- **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 a 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.
- 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.
- 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 Beam Snow Roof Load Table

Versa-Lam® LVL 2.1E 2800 and 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 / Intermediate supports

Beam Span	1¾" Versa-Lam® LVL 2.1E 2800						3½" Versa-Lam® LVL 2.1E 3100						5¼" Versa-Lam® LVL 2.1E 3100						7" Versa-Lam® LVL 2.1E 3100					
	Beam Depth						Beam Depth						Beam Depth						Beam Depth					
	7¼"	9½"	11⅞"	14"	16" (1)	18" (1)	7¼"	9½"	11⅞"	14"	16"	18"	9½"	11⅞"	14"	16"	18"	20"	11⅞"	14"	16"	18"	20"	24"
6'	878	1,224	1,640	2,066	2,399	2,398	1,756	2,447	3,279	4,132	4,798	4,796	3,671	4,919	6,198	7,197	7,194	7,192	6,558	8,264	9,596	9,593	9,589	9,582
	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	2/5	2.8/7	3.8/9.4	4.7/11.8	5.5/13.8	5.5/13.8	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'	707	1,009	1336	1,,662	2,004	2,054	1,464	2,019	2,672	3,325	4,008	4,109	3,028	4,008	4,987	6,013	6,163	6,161	5,344	6,649	8,017	8,218	8,214	8,207
	678	–	–	–	–	–	1,357	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1.9/4.7	2.7/6.8	3.6/8.9	4.4/11.1	5.4/13.4	5.5/13.8	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'	541	859	1,127	1,390	1,661	1,797	1,198	1,718	2,254	2,780	3,323	3,593	2,577	3,381	4,171	4,984	5,390	5,387	4,508	5,561	6,645	7,186	7,183	7,176
	466	–	–	–	–	–	931	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	1.7/4.1	2.6/6.6	3.5/8.6	4.3/10.6	5.1/12.7	5.5/13.8	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'	426	712	974	1,194	1,418	1,596	881	1,495	1,948	2,389	2,837	3,192	2,242	2,923	3,583	4,255	4,788	4,786	3,897	4,778	5,673	6,384	6,381	6,374
	333	–	–	–	–	–	665	1,431	–	–	–	–	2,146	–	–	–	–	–	–	–	–	–	–	–
	1.5/3.7	2.5/6.1	3.4/8.4	4.1/10.3	4.9/12.2	5.5/13.8	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	576	858	1,047	1,237	1,436	648	1,276	1,716	2,094	2,474	2,871	1,913	2,,574	3140	3,711	4,307	4,304	3,431	4,187	4,949	5,743	5,739	5,732
	246	532	–	–	–	–	491	1,065	–	–	–	–	1,597	–	–	–	–	–	–	–	–	–	–	–
	1.5/3.1	2.2/5.5	3.3/8.2	4/10	4.7/11.9	5.5/13.8	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	475	725	932	1,097	1,272	490	1,053	1,532	1,863	2,194	2,545	1,579	2,299	2,795	3,290	3,817	3,911	3,065	3,726	4,387	5,090	5,214	5,207
	186	406	–	–	–	–	372	812	1,523	–	–	–	1,218	2,285	–	–	–	–	3,046	–	–	–	–	–
	1.5/3	2/5	3.1/7.7	3.9/9.8	4.6/11.6	5.4/13.4	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	398	609	831	985	1,139	379	835	1,349	1,678	1,970	2,278	1,253	2,023	2,517	2,955	3,417	3,582	2,697	3,356	3,940	4,556	4,777	4,769
	144	317	597	–	–	–	289	633	1,194	–	–	–	950	1,791	–	–	–	–	2389	–	–	–	–	–
	1.5/3	1.8/4.6	2.8/7	3.8/9.6	4.5/11.3	5.2/13.1	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	331	518	708	894	1,031	298	662	1,147	1,526	1,787	2,062	992	1,721	2,289	2,681	3,092	3,305	2,295	3,052	3,574	4,123	4,406	4,399
	114	251	476	–	–	–	229	503	953	1,513	–	–	754	1,429	2,269	–	–	–	1,905	3,026	–	–	–	–
	1.5/3	1.7/4.1	2.6/6.5	3.5/8.8	4.5/11.2	5.1/12.9	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	266	446	609	785	941	239	532	988	1,350	1,635	1,883	798	1,482	2,025	2,453	2,824	3,067	1,976	2,701	3,271	3,765	4,089	4,082
	92	203	386	–	–	–	184	405	771	1,230	–	–	608	1,157	1,845	–	–	–	1,543	2,460	–	–	–	–
	1.5/3	1.5/3.6	2.4/6	3.3/8.2	4.2/10.6	5.1/12.7	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'	97	217	388	530	683	854	193	434	833	1,175	1,507	1,732	650	1,250	1,762	2,261	2,598	2,861	1,667	2,349	3,014	3,464	3,814	3,807
	75	166	317	506	–	–	150	332	633	1,013	1,473	–	497	950	1,519	2,210	–	–	1266	2025	2946	–	–	–
	1.5/3	1.5/3.2	2.2/5.6	3.1/7.7	3.9/9.9	4.9/12.3	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	179	340	465	599	749	159	358	690	1,031	1,328	1,603	536	1,035	1,546	1,993	2,405	2,680	1,380	2,062	2,657	3,207	3,573	3,566
	62	137	263	421	–	–	124	275	526	843	1,230	–	412	788	1,264	1,845	–	–	1,051	1,686	2,460	–	–	–
	1.5/3	1.5/3	2.1/5.3	2.9/7.2	3.7/9.2	4.6/11.5	1.5/3	1.5/3	2.1/5.3	3.2/7.9	4.1/10.2	4.9/12.3	1.5/3	2.1/5.3	3.2/7.9	4.1/10.2	4.9/12.3	5.5/13.8	2.1/5.3	3.2/7.9	4.1/10.2	4.9/12.3	5.5/13.8	5.5/13.8
17'	66	149	289	411	530	663	132	298	577	912	1,175	1,470	447	866	1,368	1,763	2,204	2,521	1,155	1,823	2,350	2,939	3,361	3,354
	52	115	220	354	518	–	104	230	441	709	1,037	1,443	345	661	1,063	1,555	2,165	–	882	1,418	2,074	2,886	–	–
	1.5/3	1.5/3	1.9/4.8	2.7/6.8	3.5/8.7	4.3/10.9	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	244	366	472	590	110	251	487	790	1,047	1,309	376	731	1,184	1,570	1,964	2,367	975	1,579	2,093	2,618	3,156	3,165
	44	97	187	301	441	–	87	194	373	602	882	1,230	291	560	902	1,322	1,845	–	747	1,203	1,763	2,460	–	–
	1.5/3	1.5/3	1.7/4.3	2.6/6.4	3.3/8.2	4.1/10.3	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	5.5/13.7	1.7/4.3	2.8/6.9	3.6/9.1	4.5/11.4	5.5/13.7	5.5/13.8
19'	46	106	207	328	423	529	93	212	415	674	938	1,173	319	622	1,011	1,407	1,760	2,150	829	1,347	1,876	2,347	2,867	2,996
	37	83	160	257	378	528	74	166	319	515	756	1,056	249	479	772	1133	1584	2130	638	1,029	1,511	2,112	2,839	–
	1.5/3	1.5/3	1.5/3.8	2.4/6	3.1/7.8	3.9/9.7	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'		91	178	289	381	477	79	181	355	579	845	1,057	272	533	868	1267	1586	1938	711	1,158	1,690	2,115	2,584	2,844
		71	137	222	326	457	64	142	275	444	652	913	214	412	666	979	1370	1845	549	887	1,305	1,827	2,460	–
		1.5/3	1.5/3.5	2.3/5.6	3/7.4	3.7/9.2	1.5/3	1.5/3	1.5/3.5	2.3/5.6	3.3/8.2	4.1/10.2	1.5/3	1.5/3.5	2.3/5.6	3.3/8.2	4.1/10.2	5/12.5	1.5/3.5	2.3/5.6	3.3/8.2	4.1/10.2	5/12.5	5.5/13.8
22'		67	133	218	314	393	58	135	266	436	646	871	202	399	654	970	1307	1597	532	871	1,293	1,742	2,129	2,582
		54	104	168	248	348	48	107	208	336	496	696	161	311	504	743	1044	1410	415	672	991	1,392	1,880	–
		1.5/3	1.5/3	1.9/4.7	2.7/6.7	3.4/8.4	1.5/3	1.5/3	1.5/3	1.9/4.7	2.8/6.9	3.7/9.3	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	102	168	249	329	43	102	204	335	499	706	153	305	503	748	1059	1337	407	670	998	1,412	1,783	2,363
		42	80	130	193	271	37	83	161	261	385	542	125	241	391	578	813	1100	321	521	770	1,083	1,467	–
		1.5/3	1.5/3	1.6/4	2.3/5.9	3.1/7.7	1.5/3	1.5/3	1.5/3	1.6/4	2.3/5.9	3.3/8.3	1.5/3	1.5/3	1.6/4	2.3/5.9	3.3/8.3	4.2/10.4	1.5/3	1.6/4	2.3/5.9	3.3/8.3	4.2/10.4	5.5/13.8
26'			79	131	196	278		79	158	262	392	557	118	238	393	588	835	1136	317	524	784	1,113	1,514	2,144
			63	103	152	215		65	127	206	305	430	98	190	309	457	645	874	254	412	610	859	1,166	1,963
			1.5/3	1.5/3.4	2/5	2.8/7.1		1.5/3	1.5/3	1.5/3.4	2/5	2.8/7.1	1.5/3	1.5/3	1.5/3.4	2/5	2.8/7.1	3.8/9.6	1.5/3	1.5/3.4	2/5	2.8/7.1	3.8/9.6	5.4/13.5
28'			63	104	156	223		61	125	208	313	446	92	188	313	469	668	914	250	417	626	891	1,219	1,843
			51	83	123	173		53	102	166	245	346	79	153	249	368	520	706	204	331	491	693	941	1,590
			1.5/3	1.5/3	1.7/4.4	2.5/6.2		1.5/3	1.5/3	1.5/3	1.7/4.4	2.5/6.2	1.5/3	1.5/3	1.5/3	1.7/4.4	2.5/6.2	3.3/8.4	1.5/3	1.5/3	1.7/4.4	2.5/6.2	3.3/8.4	5/12.6
30'			50	84	126	181		48	100	168	253	361	73	150	251	379	542	743	200	335	506	723	991	1,600
			42	68	100	142		43	83	135	200	283	64	125	203	301	425	578	166	270	401	566	770	1,305
			1.5/3	1.5/3	1.5/3.8	2.2/5.4		1.5/3	1.5/3	1.5/3	1.5/3.8	2.2/5.4	1.5/3	1.5/3	1.5/3	1.5/3.8	2.2/5.4	2.9/7.3	1.5/3	1.5/3	1.5/3.8	2.2/5.4	2.9/7.3	4.7/11.7

(1) 1¾ inch members deeper than 14" are to be used as multiple-member beams only.

- **Total Load** values are limited by shear, moment or deflection equal to L/180. **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/240. Check the local building code for other deflection limits that may apply. Flat and low slope roofs may require more restrictive deflection limits, consult project's design professional of record.
- 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 a 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.
- 1¾" 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 Beam Non-Snow Roof Load Table

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

Versa-Lam® LVL 2.1E 2800 and 2.1E 3100

Non-Snow (125%) Load Duration

Beam Span	1¾" Versa-Lam® LVL 2.1E 2800						3½" Versa-Lam® LVL 2.1E 3100					
	Beam Depth						Beam Depth					
	7¼"	9½"	11⅞"	14"	16" (1)	18" (1)	7¼"	9½"	11⅞"	14"	16"	18"
6'	955	1,330	1,783	2,246	2,399	2,398	1,909	2,661	3,565	4,492	4,798	4,796
	–	–	–	–	–	–	–	–	–	–	–	–
	2.2/5.5	3.1/7.6	4.1/10.2	5.1/12.9	5.5/13.8	5.5/13.8	2.2/5.5	3.1/7.6	4.1/10.2	5.1/12.9	5.5/13.8	5.5/13.8
7'	769	1,098	1,453	1,807	2,055	2,054	1592	2,195	2,905	3,615	4,111	4,109
	678	–	–	–	–	–	1357	–	–	–	–	–
	2.1/5.1	2.9/7.3	3.9/9.7	4.8/12.1	5.5/13.8	5.5/13.8	2.1/5.3	2.9/7.3	3.9/9.7	4.8/12.1	5.5/13.8	5.5/13.8
8'	588	934	1,225	1,512	1,797	1,797	1,235	1,868	2,451	3,023	3,595	3,593
	466	–	–	–	–	–	931	–	–	–	–	–
	1.8/4.5	2.9/7.1	3.8/9.4	4.6/11.6	5.5/13.8	5.5/13.8	1.9/4.7	2.9/7.1	3.8/9.4	4.6/11.6	5.5/13.8	5.5/13.8
9'	440	774	1,059	1,299	1,542	1,596	881	1,625	2,119	2,598	3,085	3,192
	333	715	–	–	–	–	665	1,431	–	–	–	–
	1.5/3.8	2.7/6.7	3.7/9.1	4.5/11.2	5.3/13.3	5.5/13.8	1.5/3.8	2.8/7	3.7/9.1	4.5/11.2	5.3/13.3	5.5/13.8
10'	324	626	933	1,138	1,345	1,436	648	1,387	1,866	2,277	2,691	2,871
	246	532	–	–	–	–	491	1,065	–	–	–	–
	1.5/3.1	2.4/6	3.6/8.9	4.4/10.9	5.2/12.9	5.5/13.8	1.5/3.1	2.7/6.6	3.6/8.9	4.4/10.9	5.2/12.9	5.5/13.8
11'	245	517	789	1,013	1,193	1,304	490	1,074	1,667	2,026	2,386	2,609
	186	406	762	–	–	–	372	812	1,523	–	–	–
	1.5/3	2.2/5.5	3.3/8.3	4.3/10.7	5/12.6	5.5/13.8	1.5/3	2.3/5.7	3.5/8.8	4.3/10.7	5/12.6	5.5/13.8
12'	189	418	662	904	1,071	1,195	379	835	1,467	1,825	2,142	2,390
	144	317	597	–	–	–	289	633	1,194	–	–	–
	1.5/3	1.9/4.8	3.1/7.6	4.2/10.4	4.9/12.3	5.5/13.8	1.5/3	1.9/4.8	3.4/8.4	4.2/10.5	4.9/12.3	5.5/13.8
13'	149	331	563	770	972	1,102	298	662	1,248	1,660	1,944	2,205
	114	251	476	756	–	–	229	503	953	1,513	–	–
	1.5/3	1.7/4.1	2.8/7	3.8/9.6	4.8/12.1	5.5/13.8	1.5/3	1.7/4.1	3.1/7.8	4.1/10.4	4.8/12.1	5.5/13.8
14'	119	266	485	663	854	1,023	239	532	1,018	1,469	1,779	2,046
	92	203	386	615	–	–	184	405	771	1,230	–	–
	1.5/3	1.5/3.6	2.6/6.5	3.6/8.9	4.6/11.5	5.5/13.8	1.5/3	1.5/3.6	2.7/6.9	4/9.9	4.8/12	5.5/13.8
15'	97	217	417	576	743	929	193	434	833	1,278	1,639	1,884
	75	166	317	506	737	–	150	332	633	1,013	1,473	–
	1.5/3	1.5/3.2	2.4/6	3.3/8.3	4.3/10.7	5.4/13.4	1.5/3	1.5/3.2	2.4/6	3.7/9.2	4.7/11.8	5.4/13.6
16'	79	179	345	506	652	815	159	358	690	1,111	1,445	1,744
	62	137	263	421	615	–	124	275	526	843	1,230	1,707
	1.5/3	1.5/3	2.1/5.3	3.1/7.8	4/10	5/12.5	1.5/3	1.5/3	2.1/5.3	3.4/8.6	4.4/11.1	5.4/13.4
17'	66	149	289	447	577	721	132	298	577	933	1,278	1,599
	52	115	220	354	518	–	104	230	441	709	1,037	1,443
	1.5/3	1.5/3	1.9/4.8	2.9/7.3	3.8/9.5	4.7/11.8	1.5/3	1.5/3	1.9/4.8	3.1/7.7	4.2/10.5	5.2/13.1
18'	55	125	244	395	514	642	110	251	487	790	1,139	1,424
	44	97	187	301	441	615	87	194	373	602	882	1,230
	1.5/3	1.5/3	1.7/4.3	2.8/6.9	3.6/8.9	4.5/11.2	1.5/3	1.5/3	1.7/4.3	2.8/6.9	4/9.9	4.9/12.3
19'	46	106	207	337	460	576	93	212	415	674	993	1,277
	37	83	160	257	378	528	74	166	319	515	756	1,056
	1.5/3	1.5/3	1.5/3.8	2.5/6.2	3.4/8.5	4.2/10.6	1.5/3	1.5/3	1.5/3.8	2.5/6.2	3.6/9.1	4.7/11.7
20'	39	91	178	289	415	519	79	181	355	579	855	1,151
	32	71	137	222	326	457	64	142	275	444	652	913
	1.5/3	1.5/3	1.5/3.5	2.3/5.6	3.2/8	4/10	1.5/3	1.5/3	1.5/3.5	2.3/5.6	3.3/8.3	4.4/11.1
22'		67	133	218	323	427	58	135	266	436	646	912
		54	104	168	248	348	48	107	208	336	496	696
		1.5/3	1.5/3	1.9/4.7	2.8/6.9	3.6/9.1	1.5/3	1.5/3	1.5/3	1.9/4.7	2.8/6.9	3.9/9.7
24'		51	102	168	249	353	43	102	204	335	499	706
		42	80	130	193	271	37	83	161	261	385	542
		1.5/3	1.5/3	1.6/4	2.3/5.9	3.3/8.3	1.5/3	1.5/3	1.5/3	1.6/4	2.3/5.9	3.3/8.3
26'		39	79	131	196	278		79	158	262	392	557
		33	63	103	152	215		65	127	206	305	430
		1.5/3	1.5/3	1.5/3.4	2/5	2.8/7.1		1.5/3	1.5/3	1.5/3.4	2/5	2.8/7.1
28'			63	104	156	223		61	125	208	313	446
			51	83	123	173		53	102	166	245	346
			1.5/3	1.5/3	1.7/4.4	2.5/6.2		1.5/3	1.5/3	1.5/3	1.7/4.4	2.5/6.2
30'			50	84	126	181		48	100	168	253	361
			42	68	100	142		43	83	135	200	283
			1.5/3	1.5/3	1.5/3.8	2.2/5.4		1.5/3	1.5/3	1.5/3	1.5/3.8	2.2/5.4

Beam Span	5¼" Versa-Lam® LVL 2.1E 3100						7" Versa-Lam® LVL 2.1E 3100					
	Beam Depth						Beam Depth					
	9½"	11⅞"	14"	16"	18"	20"	11⅞"	14"	16"	18"	20"	24"
6'	3,991	5,348	6,738	7,197	7,194	7,192	7,131	8,984	9,596	9,593	9,589	9,582
	–	–	–	–	–	–	–	–	–	–	–	–
	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'	3,293	4,358	5,422	6,166	6,163	6,161	5,810	7,229	8,221	8,218	8,214	8,207
	–	–	–	–	–	–	–	–	–	–	–	–
	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'	2,802	3,676	4,535	5,392	5,390	5,387	4,901	6,047	7,190	7,186	7,183	7,176
	–	–	–	–	–	–	–	–	–	–	–	–
	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'	2,438	3,178	3,897	4,627	4,788	4,786	4,238	5,195	6,169	6,384	6,381	6,374
	2146	–	–	–	–	–	–	–	–	–	–	–
	2.8/7	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'	2,081	2,799	3,415	4,036	4,307	4,304	3,732	4,554	5,381	5,743	5,739	5,732
	1,597	–	–	–	–	–	–	–	–	–	–	–
	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'	1,611	2,500	3,039	3,578	3,913	3,911	3,333	4,052	4,771	5,218	5,214	5,207
	1,218	2285	–	–	–	–	3,046	–	–	–	–	–
	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'	1,253	2,200	2,737	3,214	3,585	3,582	2,934	3,650	4,285	4,780	4,777	4,769
	950	1791	–	–	–	–	2,389	–	–	–	–	–
	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'	992	1,872	2,490	2,916	3,307	3,305	2,496	3,320	3,888	4,410	4,406	4,399
	754	1,429	2,269	–	–	–	1,905	3,026	–	–	–	–
	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'	798	1,527	2,203	2,668	3,069	3,067	2036	2,,938	3,558	4,093	4,089	4,082
	608	1,157	1,845	–	–	–	1,543	2,460	–	–	–	–
	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'	650	1,250	1,917	2,459	2,826	2,861	1,667	2,556	3,279	3,768	3,814	3,807
	497	950	1,519	2,210	–	–	1,266	2,025	2,946	–	–	–
	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'	536	1,035	1,667	2,168	2,616	2,680	1,380	2,223	2,890	3,488	3,573	3,566
	412	788	1,264	1,845	2,561	–	1,051	1,686	2,460	3,415	–	–
	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'	447	866	1,399	1,918	2,398	2,521	1,155	1,865	2,557	3,198	3,361	3,354
	345	661	1,063	1,555	2,165	–	882	1,418	2,074	2,886	–	–
	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'	376	731	1,184	1,708	2,137	2,379	975	1,579	2,278	2,849	3,172	3,165
	291	560	902	1,322	1,845	–	747	1,203	17,63	2,460	–	–
	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'	319	622	1,011	1,490	1,915	2,253	829	1,347	1,986	2,553	3,004	2,996
	249	479	772	1,133	1,584	2,130	638	1,029	1,511	2,112	2,839	–
	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'	272	533	868	1,283	1,726	2,109	711	1,158	1,711	2,301	2,812	2,844
	214	412	666	979	1,370	1,845	549	887	1,305	1,827	2,460	–
	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'	202	399	654	970	1,367	1,738	532	871	1,293	1,823	2317	2582
	161	311	504	743	1,044	1,410	415	672	991	1,392	1880	–
	1.5/3	1.5/3	1.9/4.7	2.8/6.9	3.9/9.7	4.9/12.3	1.5/3	1.9/4.7	2.8/6.9	3.9/9.7	4.9/12.3	5.5/13.8
24'	153	305	503	748	1,059	1,440	407	670	998	1,412	1,920	2,363
	125	241	391	578	813	1,100	321	521	770	1083	1,467	–
	1.5/3	1.5/3	1.6/4	2.3/5.9	3.3/8.3	4.5/11.2	1.5/3	1.6/4	2.3/5.9	3.3/8.3	4.5/11.2	5.5/13.8
26'	118	238	393	588	835	1,139	317	524	784	1,113	1,518	2,178
	98	190	309	457	645	874	254	412	610	859	1,166	1,963
	1.5/3	1.5/3	1.5/3.4	2/5	2.8/7.1	3.8/9.6	1.5/3	1.5/3.4	2/5	2.8/7.1	3.8/9.6	5.5/13.8
28'	92	188	313	469	668	914	250	417	626	891	1,219	2,007
	79	153	249	368	520	706	204	331	491	693	941	1,590
	1.5/3	1.5/3	1.5/3	1.7/4.4	2.5/6.2	3.3/8.4	1.5/3	1.5/3	1.7/4.4	2.5/6.2	3.3/8.4	5.5/13.7
30'	73	150	251	379	542	743	200	335	506	723	991	1,696
	64	125	203	301	425	578	166	270	401	566	770	1,305
	1.5/3	1.5/3	1.5/3	1.5/3.8	2.2/5.4	2.9/7.3	1.5/3	1.5/3	1.5/3.8	2.2/5.4	2.9/7.3	5/12.4

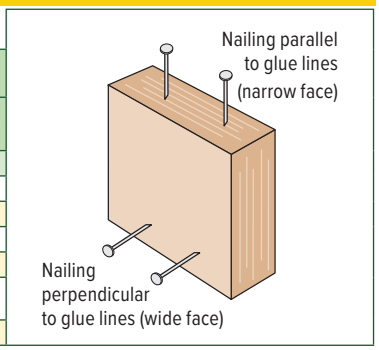
(1) 1¾ inch members deeper than 14" are to be used as multiple-member beams only..

- **Total Load** values are limited by shear, moment or deflection equal to L/180. **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/240. Check the local building code for other deflection limits that may apply. Flat and low slope roofs may require more restrictive deflection limits, consult project's design professional of record.
- 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 a 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.
- 1¾" 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 Beam Allowable Nailing

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	
	1 5/16"		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"	1"	2"	½"	2"	1"
8d Common (0.131"ø x 2.5")	3"	2"	3"	2"	2"	1"	2"	1"
10d and 12d Box (0.128"ø x 3", 3.25")	3"	2"	3"	2"	2"	1"	2"	1"
16d Box (0.135"ø x 3.5")	3"	2"	3"	2"	2"	1"	2"	2"
10d and 12d Common and 16d Sinker (0.148"ø x 3", 3.25")	4"	3"	4"	3"	2"	2"	2"	2"
16d Common (0.162"ø x 3.5")	6"	4"	6"	3"	2"	2"	3"	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 Beam Design Values

Grade	Width	Depth	Weight (lb/ft)	Allowable Shear (lb)	Allowable Moment (ft-lb)	Moment of Inertia (in⁴)
Versa-Lam® LVL 1.5E 1800	1 5/16"	9½"	3.2	1,870	3,039	93.8
		11⅞"	4.0	2,338	4,632	183.2
		14"	4.7	2,756	6,322	300.1
		16"	5.4	3,150	8,136	448.0
		18"	6.1	3,544	10,163	637.9
		20"	6.7	3,938	12,401	875.0
Versa-Lam® LVL 1.8E 2400	1½	3½	1.3	998	702	5.4
		5½	2.1	1,568	1,649	20.8
		7¼	2.8	2,066	2,779	47.6
		9¼	3.6	2,636	4,404	98.9
		9½	3.7	2,708	4,631	107.2
		11¼	4.3	3,206	6,374	178.0
		11⅞	4.6	3,384	7,059	209.3
		14	5.4	3,990	9,634	343.0
		16	6.2	4,560	12,397	512.0
Versa-Lam® LVL 2.1E 2800	1¾"	5½"	2.5	1,829	2,245	24.3
		7¼"	3.3	2,411	3,783	55.6
		9¼"	4.2	3,076	5,994	115.4
		9½"	4.3	3,159	6,304	125.0
		11¼"	5.1	3,741	8,675	207.6
		11⅞"	5.3	3,948	9,608	244.2
		14"	6.3	4,655	13,112	400.2
		16"	7.2	5,320	16,874	597.3
		18"	8.1	5,985	21,079	850.5

Grade	Width	Depth	Weight (lb/ft)	Allowable Shear (lb)	Allowable Moment (ft-lb)	Moment of Inertia (in⁴)
Versa-Lam® LVL 2.1E 3100	3½"	5½"	4.9	3,658	4,971	48.5
		7¼"	6.5	4,821	8,377	111.1
		9¼"	8.3	6,151	13,272	230.8
		9½"	8.5	6,318	13,958	250.1
		11¼"	10.1	7,481	19,210	415.3
		11⅞"	10.7	7,897	21,275	488.4
		14"	12.6	9,310	29,035	800.3
		16"	14.4	10,640	37,364	1,194.7
		18"	16.2	11,970	46,674	1,701.0
		20"	18.0	13,300	56,952	2,333.3
	5¼"	5¼"	7.1	5,237	6,830	63.3
		5½"	7.4	5,486	7,457	72.8
		7¼"	9.8	7,232	12,566	166.7
		9¼"	12.5	9,227	19,908	346.3
		9½"	12.8	9,476	20,937	375.1
		11¼"	15.2	11,222	28,814	622.9
		11⅞"	16.0	11,845	31,913	732.6
		14"	18.9	13,965	43,552	1,200.5
		16"	21.6	15,960	56,046	1,792.0
		18"	24.3	17,955	70,011	2,551.5
		20"	27.0	19,950	85,428	3,500.0
		24"	32.4	23,940	120,549	6,048.0
	7"	9¼"	16.6	12,303	26,544	461.7
		9½"	17.1	12,635	27,916	500.1
		11¼"	20.2	14,963	38,419	830.6
		11⅞"	21.4	15,794	42,550	976.8
		14"	25.2	18,620	58,069	1,600.7
		16"	28.8	21,280	74,728	2,389.3
		18"	32.4	23,940	93,348	3,402.0
		20"	36.0	26,600	113,904	4,666.7
		24"	43.2	31,920	160,732	8,064.0

Versa-Lam LVL Beam Allowable Stress Values

Design Property	Grade	Modulus of Elasticity True (Shear-Free) E (x 10^6 psi)[1][7]	Modulus of Elasticity Apparent E (x 10^6 psi)[1]	Modulus of Elasticity for Stability E_{min} (x 10^6 psi)[1][8]	Bending 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 $F_{c\perp}$ (psi)[1][6]	Equivalent Specific Gravity for Fastener Design (SG)
Versa-Lam® LVL Beams 1 ¾"	2.1E 2800	2.1	2.0	1.1	2,800	285	1,950	3,000	750	0.5
Versa-Lam® LVL Beams 3½" or Wider	2.1E 3100	2.1	2.0	1.1	3,100	285	1,950	3,000	750	0.5
Versa-Lam® LVL Studs	1.8E 2400	1.8	1.7	0.9	2,400	285	1,500	3,000	750	0.5
Versa-Lam® LVL Columns	1.8E 2650	1.8	1.7	0.9	2,650	285	1,650	3,000	750	0.5

NOTES

(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, $(12/d)^{1/9}$ where d = member depth (in).

(4) Stress applied perpendicular to the gluelines.

(5) Tension value shall be multiplied by a length factor, $(4/L)^{1/8}$ where L = member length (ft). Use L = 4 for members less than four feet long.

(6) Stress applied parallel to the gluelines.

(7) True or shear-free modulus of elasticity does not account for shear deformation.

(8) E_{min} is the reference modulus of elasticity for beam and column stability calculations. It is calculated using $E_{apparent}$ in accordance with Appendix D of the 2018 NDS. When calculating E_{min}, 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%.

Versa-Lam LVL 1.8E 2650 Columns

Allowable Axial Load (lb)

Column Length	3½" x 3½"			3½" x 5¼"			3½" x 7"			3½" x 7¼"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
4'	14,700	16,090	16,930	22,070	24,165	25,430	29,450	32,240	33,920	30,500	33,390	35,130
5'	12,270	13,150	13,660	18,425	19,740	20,515	24,580	26,330	27,365	25,460	27,270	28,340
6'	10,080	10,650	10,980	15,140	15,995	16,495	20,195	21,335	22,000	20,910	22,090	22,780
7'	8,310	8,705	8,930	12,480	13,075	13,415	16,650	17,435	17,890	17,250	18,060	18,530
8'	6,930	7,205	7,370	10,405	10,825	11,070	13,880	14,440	14,760	14,370	14,960	15,290
9'	5,840	6,050	6,160	8,770	9,080	9,260	11,700	12,115	12,350	12,120	12,540	12,790
10'	4,980	5,135	5,225	7,480	7,715	7,850	9,975	10,290	10,470	10,330	10,660	10,840
11'	4,290	4,410	4,480	6,445	6,625	6,730	8,595	8,835	8,975	8,900	9,150	9,300
12'	3,730	3,825	3,880	5,600	5,745	5,830	7,475	7,665	7,775	7,740	7,940	8,050
13'	3,270	3,350	3,390	4,915	5,030	5,095	6,555	6,710	6,795	6,790	6,950	7,040
14'	2,890	2,950	2,990	4,340	4,435	4,490	5,790	5,915	5,990	6,000	6,130	6,200

Column Length	5¼" x 5¼"			5¼" x 5½"			5¼" x 7"			5¼" x 7¼"			7" x 7"			7 x 7¼"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
6'	33,070	36,220	38,110	34,670	37,950	39,930												
7'	29,420	31,730	33,085	30,830	33,240	34,660												
8'	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'	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'	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'	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'	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'	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'	12,450	12,870	13,115	13,040	13,480	13,740	16,615	17,180	17,500	17,210	17,790	18,130	33,260	34,825	35,740	34,460	36,070	37,030
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	30,325	31,645	32,395	31,410	32,780	33,560
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	27,720	28,835	29,490	28,710	29,870	30,540
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	25,415	26,375	26,920	26,330	27,320	27,880
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	23,370	24,195	24,665	24,210	25,060	25,560
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	21,550	22,270	22,670	22,320	23,070	23,490
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	19,925	20,550	20,910	20,640	21,280	21,660
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	18,475	19,020	19,330	19,130	19,700	20,020
22'													17,165	17,650	17,925	17,780	18,280	18,570
23'													15,990	16,420	16,660	16,560	17,010	17,260
24'													14,930	15,310	15,525	15,460	15,860	16,080

- Table assumes that the column is braced at column ends only. Effective column length is equal to actual column length.
- Allowable loads are based on:
  - one-piece (solid) column members used in dry service conditions. BC Calc® software may be used for multi-piece column design.
  - an eccentricity value equal to 0.167 multiplied by either the column thickness or width (worst case).
  - axial 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.

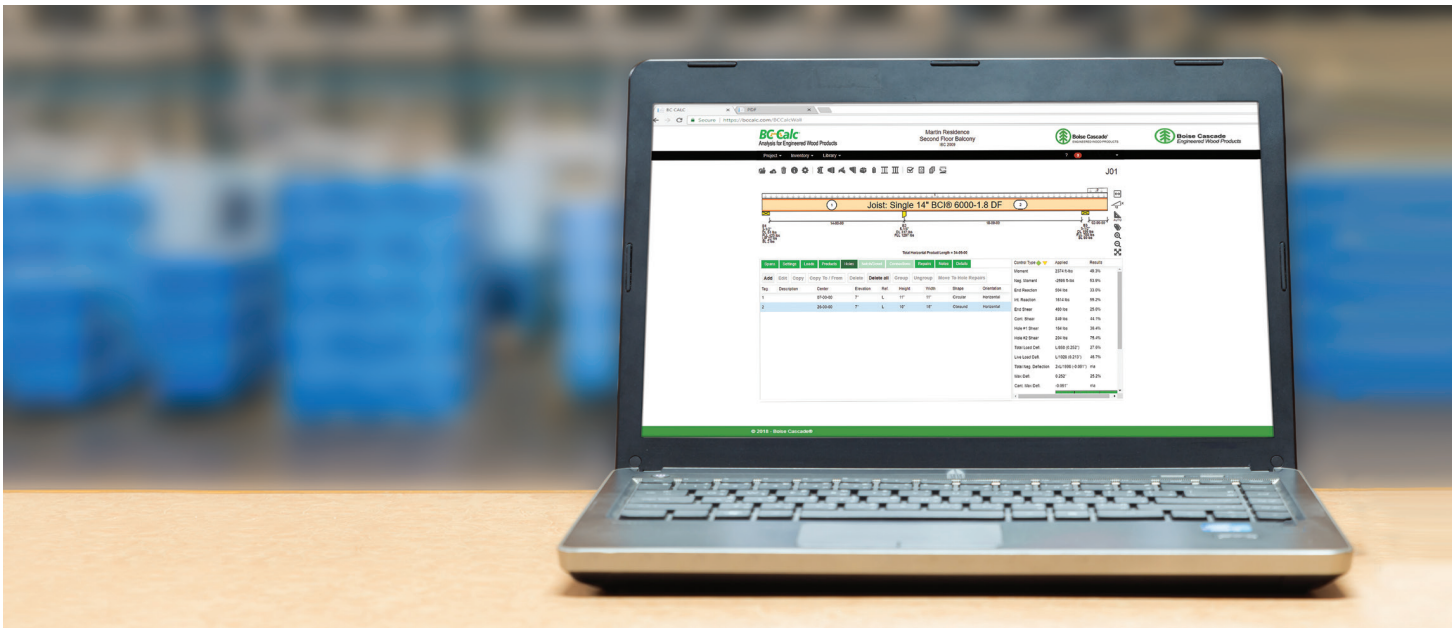
Versa-Lam LVL 1.8E 2400 Studs

Reference Design Values

Product	Bending F_b (psi)	Compression Parallel to Grain $F_{c\|\|}$ (psi)	Compression Perp to Grain $F_{c\perp}$ (psi)	Modulus of Elasticity – Apparent E (psi)	Horizontal Shear F_v (psi)
Versa-Lam LVL 1.8E 2400 Studs	2,617	3,000	610	1,700,000	285
Douglas Fir # 2 Grade 2 x 6	1,170	1,350	625	1,600,000	180
Spruce Pine Fir (North) # 1 / 2 Grade 2 x 6	1,138	1,150	425	1,400,000	135
Hem-Fir # 2 Grade 2 x 6	1,105	1,300	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 Eastern Tall Wall Guide.

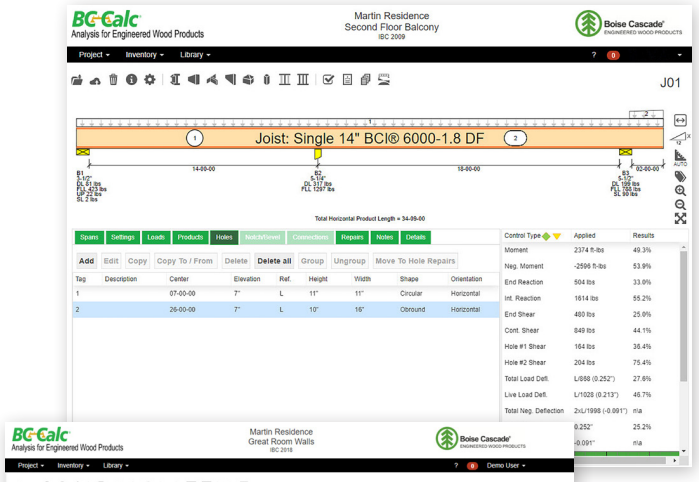


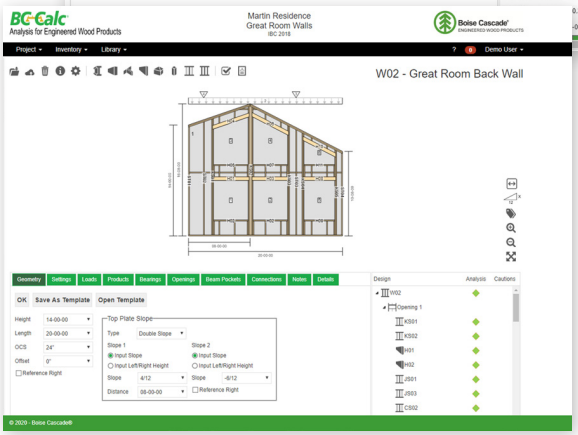
INTEGRATED SOFTWARE FOR EASY SPECIFICATION

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



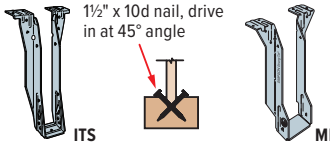


With Boise Cascade's software suite, there's no need to worry about missing pieces or manual entry errors. The software applications share data digitally, ensuring nothing gets lost or mistyped.

Boise Cascade's software suite is available at www.bc.com/ewp/software/

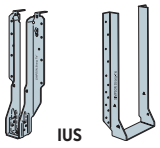
Framing Connectors: Simpson Strong-Tie

Single Joist – Top Flange



Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	ITS2.06/9.5	993	(6) 10d	(2) 10dx1½"
	6000	ITS2.37/9.5	1225	(6) 10d	(2) 10dx1½"
	6500	ITS2.56/9.5	1225	(6) 10d	(2) 10dx1½"
11⅞"	5000	ITS2.06/11.88	1068	(6) 10d	(2) 10dx1½"
	6000	ITS2.37/11.88	1237	(6) 10d	(2) 10dx1½"
	6500	ITS2.56/11.88	1237	(6) 10d	(2) 10dx1½"
	60	ITS2.37/11.88	1210	(6) 10d	(2) 10dx1½"
	90	ITS3.56/11.88	1478	(6) 10d	(2) 10dx1½"
14"	5000	ITS2.06/14	1081	(6) 10d	(2) 10dx1½"
	6000	ITS2.37/14	1262	(6) 10d	(2) 10dx1½"
	6500	ITS2.56/14	1262	(6) 10d	(2) 10dx1½"
	60	ITS2.37/14	1225	(6) 10d	(2) 10dx1½"
	90	ITS3.56/14	1507	(6) 10d	(2) 10dx1½"
16"	6000	ITS2.37/16	1268	(6) 10d	(2) 10dx1½"
	6500	ITS2.56/16	1362	(6) 16d	(2) 10dx1½"
	60	ITS2.37/16	1228	(6) 16d	(2) 10dx1½"
	90	ITS3.56/16	1520	(6) 10d	(2) 10dx1½"
18"	90	**MIT418**	2400	(6) 16d	(2) 10dx1½"
20"	90	**MIT420**	2400	(6) 16d	(2) 10dx1½"

Single Joist – Face Mount

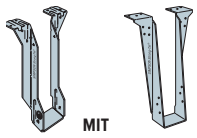


Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	IUS2.06/9.5	950	(8) 10d	–
	6000	IUS2.37/9.5	950	(8) 10d	–
	6500	IUS2.56/9.5	950	(8) 10d	–
11⅞"	5000	IUS2.06/11.88	1068	(10) 10d	–
	6000	IUS2.37/11.88	1070	(10) 10d	–
	6500	IUS2.56/11.88	1185	(10) 10d	–
	60	IUS2.37/11.88	1185	(10) 10d	–
	90	IUS3.56/11.88	1420	(12) 10d	–
14"	5000	IUS2.06/14	1080	(12) 10d	–
	6000	IUS2.37/14	1262	(12) 10d	–
	6500	IUS2.56/14	1262	(12) 10d	–
	60	IUS2.37/14	1262	(12) 10d	–
	90	IUS3.56/14	1420	(12) 10d	–
16"	5000	IUS2.06/16	1268	(14) 10d	–
	6500	IUS2.56/16	1268	(14) 10d	–
	60	IUS2.37/16	1268	(14) 10d	–
	90	IUS3.56/16	1580	(14) 10d	–
18"	90	**MIU3.56/18**	2425	(26) 16d	(2) 10dx1½"
20"	90	**MIU3.56/20**	2575	(26) 16d	(2) 10dx1½"

Face Mount Skewed 45° Joist Hanger

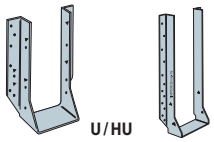
Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**SUR/L2.06/9**	1,251	(14) 16d	(6) 10dx1½"
	6000	**SUR/L2.37/9**	1,417	(14) 16d	(6) 10dx1½"
	6500	**SUR/L2.56/9**	1,417	(14) 16d	(6) 10dx1½"
11⅞"	5000	**SUR/L2.06/11**	1,467	(14) 16d	(6) 10dx1½"
	6000	**SUR/L2.37/11**	1,467	(16) 16d	(6) 10dx1½"
	6500	**SUR/L2.56/11**	1,467	(14) 16d	(2) 10dx1½"
	60	**SUR/L2.37/11**	1,466	(14) 16d	(6) 10dx1½"
	90	**SUR/L410**	1,860	(14) 16d	(6) 16d
14"	5000	**SUR/L2.06/11**	1,693	(18) 16d	(8) 10dx1½"
	6000	**SUR/L2.37/14**	1,693	(18) 16d	(8) 10dx1½"
	6500	**SURI/L2.56/14**	1,693	(18) 16d	(8) 10dx1½"
	60	**SUR/L2.37/14**	1,689	(18) 16d	(8) 10dx1½"
	90	**SUR/L414**	2,035	(18) 16d	(8) 16d
16"	6000	**SUR/L2.37/14**	1,920	(18) 16d	(8) 10dx1½"
	6500	**SURI/L2.56/14**	1,920	(18) 16d	(8) 10dx1½"
	60	**SUR/L2.37/14**	1,912	(18) 16d	(8) 10dx1½"
	90	**SUR/L414**	2,235	(18) 16d	(8) 16d
18"	90	**SUR/L414**	2,395	(18) 16d	(8) 16d
20"	90	**SUR/L414**	2,395	(18) 16d	(8) 16d

Double Joist – Top Flange



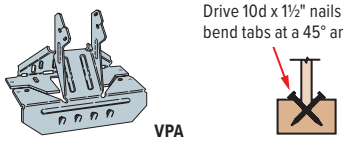
Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**MIT4.12/9.5**	2305	(10) 16d	(2) 10dx1½"
	6000	**MIT359.5-2**	2400	(8) 16d	(2) 10dx1½"
	6500	**MIT39.5**	2400	(8) 16d	(2) 10dx1½"
11⅞"	5000	**MIT4.12/11.88**	2305	(10) 16d	(2) 10dx1½"
	6000	**MIT3511.88-2**	2000	(8) 16d	(2) 10dx1½"
	6500	**MIT311.88-2**	2400	(8) 16d	(2) 10dx1½"
	60	MIT3511.88-2	2000	(8) 16d	(2) 10dx1½"
	90	**B7.12/11.88**	3785	(14) 16d	(6) 16d
14"	5000	**MIT4.12/14**	2305	(8) 16d	(2) 10dx1½"
	6000	**MIT3514-2**	2400	(8) 16d	(2) 10dx1½"
	6500	**MIT314-2**	2400	(8) 16d	(2) 10dx1½"
	60	MIT3514-2	2400	(8) 16d	(2) 10dx1½"
	90	**B7.12/14**	3800	(14) 16d	(6) 10d
16"	6000	**MIT4.75/16**	2305	(8) 16d	(2) 10dx1½"
	6500	**MIT5.12/16**	2400	(8) 16d	(2) 10dx1½"
	60	MIT4.75/16	2305	(3) 16d	(2) 10dx1½"
	90	**B7.12/16**	3800	(14) 16d	(6) 16d
18"	90	**B7.12/18**	3800	(3) 16d	(6) 16d
20"	90	**B7.12/20**	3800	(3) 16d	(6) 16d

Double Joist – Face Mount



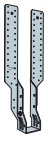
Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**MIU4.12/9**	2270	(14) 16d	(6) 10d
	6000	**MIU4.75/9**	1860	(14) 16d	(2) 10dx1½"
	6500	**MIU5.12/9**	2270	(14) 16d	(2) 10dx1½"
11⅞"	5000	**MIU4.12/11**	2840	(16) 16d	(6) 10d
	6000	**MIU4.75/11**	2130	(16) 16d	(2) 10dx1½"
	6500	**MIU5.12/11**	2840	(16) 16d	(2) 10dx1½"
	60	MIU4.75/11	2130	(16) 16d	(2) 10dx1½"
	90	**HU412-2**	2145	(16) 16d	(6) 16d
14"	5000	**MIU4.12/14**	3125	(18) 16d	(2) 10dx1½"
	6000	**MIU4.75/14**	2395	(18) 16d	(2) 10dx1½"
	6500	**MIU5.12/14**	3125	(18) 16d	(2) 10dx1½"
	60	MIU4.75/14	2395	(18) 16d	(2) 10dx1½"
	90	**HU414-2**	2680	(20) 16d	(8) 16d
16"	6000	**MIU4.75/16**	2660	(20) 16d	(2) 10dx1½"
	6500	**MIU5.12/16**	3125	(20) 16d	(2) 10dx1½"
	60	MIU4.75/16	2660	(20) 16d	(2) 10dx1½"
	90	**HU414-2**	2680	(20) 16d	(8) 16d
18"	90	**HU414-2**	2680	(20) 16d	(8) 16d
20"	90	**HU414-2**	2680	(20) 16d	(8) 16d

Variable Pitch Joist Connector



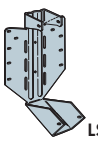
Joist Depth	BCI®	Hanger	Capacity (lbs)	Fastener	
				Top Plate	Rafter
9½"	5000	VPA2.06	993	(8) 10d	(2) 10dx1½"
	6000	VPA35	1225	(8) 10d	(2) 10dx1½"
	6500	VPA3	1225	(9) 10d	(2) 10dx1½"
11⅞"	5000	VPA2.06	1068	(8) 10d	(2) 10dx1½"
	6000	VPA35	1230	(8) 10d	(2) 10dx1½"
	6500	VPA3	1230	(9) 10d	(2) 10dx1½"
	60	VPA35	1210	(9) 10d	(2) 10dx1½"
	90	VPA4	1230	(11) 10d	(2) 10dx1½"
14"	5000	VPA2.06	1081	(9) 10d	(2) 10dx1½"
	6000	VPA35	1230	(9) 10d	(2) 10dx1½"
	6500	VPA3	1230	(9) 10d	(2) 10dx1½"
	60	VPA35	1225	(9) 10d	(2) 10dx1½"
	90	VPA4	1230	(11) 10d	(2) 10dx1½"
16"	6000	VPA35	1230	(9) 10d	(2) 10dx1½"
	6500	VPA3	1230	(9) 10d	(2) 10dx1½"
	60	VPA35	1228	(9) 10d	(2) 10dx1½"
	90	VPA4	1230	(11) 10d	(2) 10dx1½"
18"	90	**VPA4**	1230	(11) 10d	(2) 10dx1½"
20"	90	**VPA4**	1230	(11) 10d	(2) 10dx1½"

Adjustable Height Joist Hanger



Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**THAI2.06/22**	1,181	(6) 10d	(2) 10dx1½"
	6000	**THAI3522**	1,393	(6) 10d	(2) 10dx1½"
	6500	**THAI322**	1,393	(6) 10d	(2) 10dx1½"
11⅞"	5000	**THAI2.06/22**	1,443	(6) 10d	(2) 10dx1½"
	6000	**THAI3522**	1,443	(6) 10d	(2) 10dx1½"
	6500	**THAI322**	1,443	(6) 10d	(2) 10dx1½"
	60	**THAI3522**	1,439	(6) 10d	(2) 10dx1½"
	90	**THAI422**	1,715	(6) 10d	(2) 10dx1½"
14"	5000	**THAI2.06/22**	1,600	(6) 10d	(2) 10dx1½"
	6000	**THAI3522**	1,600	(6) 10d	(2) 10dx1½"
	6500	**THAI322**	1,600	(6) 10d	(2) 10dx1½"
	60	**THAI3522**	1,582	(6) 10d	(2) 10dx1½"
	90	**THAI422**	1,715	(6) 10d	(2) 10dx1½"

Field Slope and Skew Joist Hanger



Joist Depth	BCI®	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**LSSU2.06**	995	(9) 10d	(7) 10dx1½"
	6000	**LSSUI35**	995	(9) 10d	(7) 10dx1½"
	6500	**LSSUH310**	1,425	(14) 10d	(12) 10dx1½"
11⅞"	5000	**LSSU2.06**	995	(9) 10d	(7) 10dx1½"
	6000	**LSSUI35**	995	(9) 10d	(7) 10dx1½"
	6500	**LSSUH310**	1,475	(14) 10d	(12) 10dx1½"
	60	**LSSUI35**	995	(9) 10d	(7) 10dx1½"
	90	**LSSU410**	1,625	(14) 16d	(12) 10dx1½"
14"	5000	**LSSU2.06**	995	(9) 10d	(7) 10dx1½"
	6000	**LSSUI35**	995	(9) 10d	(7) 10dx1½"
	6500	**LSSUH310**	1,600	(14) 10d	(12) 10dx1½"
	60	**LSSUI35**	995	(9) 10d	(7) 10dx1½"
	90	**LSSU410**	1,625	(14) 16d	(12) 10dx1½"

SIMPSON Strong-Tie® CONNECTORS

For more information, contact Simpson Strong-Tie at 1-800-999-5099 or *strongtie.com*

NOTES

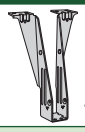
- **Bold shaded** hangers require web stiffeners.
- Capacities will vary with different nailing criteria and/or support conditions; contact supplier or Simpson Strong-Tie for further information.
- Capacity values shown are either hanger capacity values (see support requirements below) or BCI® joist end reaction capacities — whichever is less.
- All capacity values are downward loads at 100% load duration.
- Use sloped seat hangers and beveled web stiffeners when BCI® joist slope exceeds ¼" per foot.
- Leave 1/16" clearance (⅛" maximum) between the end of the supported joist and the head of the hanger.
- At max design capacity shown, hangers may exceed standard ⅛" deflection by 1/32".
- 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 material assumed to be Boise Cascade structural composite lumber or sawn lumber (Douglas fir or southern pine species).***
- Minimum support width for single- and double-joist top mount hangers is 3".
- Minimum support width for face mount hangers with 10d and 16d nails is 1¾" and 2", respectively.

Framing Connectors: MiTek Structural Connectors

Single Joist – Top Flange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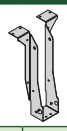
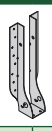

TFL

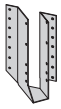
Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	TFL2095	993	(6) 10d	(2) 10dx1½"
	6000	TFL2395	1,225	(6) 10d	(2) 10dx1½"
	6500	THO26950	1,262	(10) 10d	(2) 10dx1½"
11⅞"	5000	TFL20118	1,068	(6) 10d	(2) 10dx1½"
	6000	TFL23118	1,237	(6) 10d	(2) 10dx1½"
	6500	THO26118	1,284	(10) 10d	(2) 10dx1½"
	60	TFL23118	1,237	(6) 10d	(2) 10dx1½"
	90	THO35118	1,589	(10) 10d	(2) 10dx1½"
14"	5000	TFL2014	1,081	(6) 10d	(2) 10dx1½"
	6000	TFL2314	1,262	(6) 10d	(2) 10dx1½"
	6500	THO26140	1,328	(12) 10d	(2) 10dx1½"
	60	TFL2314	1,262	(6) 10d	(2) 10dx1½"
	90	THO35140	1,625	(12) 10d	(2) 10dx1½"
16"	5000	TFL2016	1,087	(6) 10d	(2) 10dx1½"
	6000	TFL2316	1,268	(6) 10d	(2) 10dx1½"
	6500	THO26160	1,339	(12) 10d	(2) 10dx1½"
	60	TFL2316	1,268	(6) 10d	(2) 10dx1½"
	90	THO35160	1,660	(12) 10d	(2) 10dx1½"
18"	90	**TFI1418**	2,425	(6) 16d	(2) 10dx1½"
20"	90	**TFI1420**	2,575	(6) 16d	(2) 10dx1½"

Single Joist – Face Mount


THF

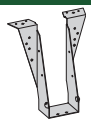
Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	IHFL20925	960	(8) 10d	–
	6000	IHFL23925	960	(8) 10d	–
	6500	THFI2595	1,250	(8) 10d	–
11⅞"	5000	IHFL20112	1,187	(10) 10d	–
	6000	IHFL23112	1,200	(10) 10d	–
	6500	THF25118	1,250	(10) 10d	–
	60	IHFL23112	1,200	(10) 10d	–
	90	IHFL35112	1,200	(10) 10d	–
14"	5000	IHFL2014	1,212	(12) 10d	–
	6000	IHFL2314	1,350	(12) 10d	–
	6500	THF2514	1,350	(14) 10d	–
	60	IHFL2314	1,350	(12) 10d	–
	90	IHFL3514	1,440	(12) 10d	–
16"	5000	IHFL2016	1,225	(14) 10d	–
	6000	IHFL2316	1,362	(14) 10d	–
	6500	IHF2616	1,362	(14) 10d	(2) 10dx1½"
	60	IHFL2316	1,362	(14) 10d	–
	90	IHFL3516	1,680	(14) 10d	–
18"	90	**IHFL3516**	1,680	(14) 10d	–
20"	90	**IHFL3516**	1,680	(14) 10d	–

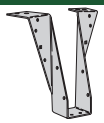
Single Joist — Face Mount Skewed 45°


SKH

Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**SKH2020L/R**	1,153	(14) 10d	(10) 10dx1½"
	6000	**SKH2320L/R**	1,384	(14) 10d	(10) 10dx1½"
	6500	**SKH2520L/R**	1,384	(14) 10d	(10) 10dx1½"
11⅞"	5000	**SKH2020L/R**	1,434	(14) 10d	(10) 10dx1½"
	6000	**SKH2320L/R**	1,434	(14) 10d	(10) 10dx1½"
	6500	**SKH2520L/R**	1,434	(14) 10d	(10) 10dx1½"
	60	**SKH2320L/R**	1,434	(14) 10d	(10) 10dx1½"
	90	**SKH410L/R**	1,900	(16) 10d	(10) 16d
14"	5000	**SKH2020L/R**	1,562	(14) 10d	(10) 10dx1½"
	6000	**SKH2320L/R**	1,562	(14) 10d	(10) 10dx1½"
	6500	**SKH2520L/R**	1,562	(14) 10d	(10) 10dx1½"
	60	**SKH2320L/R**	1,562	(14) 10d	(10) 10dx1½"
	90	**SKH410L/R**	2,050	(16) 10d	(10) 16d
16"	5000	**SKH2024L/R**	1,562	(16) 10d	(10) 10dx1½"
	6000	**SKH2324L/R**	1,690	(16) 10d	(10) 10dx1½"
	6500	**SKH2524L/R**	1,690	(16) 10d	(10) 10dx1½"
	60	**SKH2324L/R**	1,690	(16) 10d	(10) 10dx1½"
	90	**SKH414L/R**	2,250	(22) 16d	(10) 16d
18"	90	**SKH414L/R**	2,478	(22) 16d	(10) 16d
20"	90	**SKH414L/R**	2,607	(22) 16d	(10) 16d

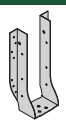
Double Joist – Top Flange


THO Double


BPH

Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	THO20950-2	2,475	(10) 16d	(6) 10d
	6000	THO23950-2	2,825	(10) 16d	(6) 10d
	6500	THO25950-2	2,825	(10) 16d	(6) 10d
11⅞"	5000	**THO20118-2**	2,920	(10) 16d	(6) 10d
	6000	**THO23118-2**	2,925	(10) 16d	(6) 10d
	6500	**THO25118-2**	2,925	(10) 16d	(6) 10d
	60	**THO23118-2**	3,212	(10) 16d	(6) 10d
	90	**BPH71118**	3,075	(10) 16d	(6) 10d
14"	5000	**THO20140-2**	3,350	(10) 16d	(6) 10d
	6000	**THO23140-2**	3,350	(12) 16d	(6) 10d
	6500	**THO25140-2**	3,350	(12) 16d	(6) 10d
	60	**THO23140-2**	3,587	(12) 16d	(6) 10d
	90	**BPH7114**	3,075	(10) 16d	(6) 10d
16"	5000	**THO20160-2**	3,137	(10) 16d	(6) 10d
	6000	**THO23160-2**	3,137	(12) 16d	(6) 10d
	6500	**THO25160-2**	3,137	(12) 16d	(6) 10d
	60	**THO23160-2**	4,050	(12) 16d	(6) 10d
	90	**BPH7116**	3,075	(10) 16d	(6) 10d
18"	90	**BPH7118**	3,070	(10) 16d	(6) 10d
20"	90	**BPH7120**	3,070	(10) 16d	(6) 10d

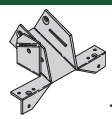
Double Joist – Face Mount


THF Double


HD

Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	IHF20925-2	1,250	(10) 10d	(2) 10dx1½"
	6000	IHF23925-2	1,250	(10) 10d	(2) 10dx1½"
	6500	THF25925-2	1,250	(10) 10d	(2) 10dx1½"
11⅞"	5000	**THF20112-2**	1,250	(10) 10d	(2) 10dx1½"
	6000	**THF23118-2**	1,890	(16) 10d	(6) 10d
	6500	**THF26112-2**	1,250	(10) 10d	(2) 10dx1½"
	60	**THF23118-2**	1,890	(16) 10d	(6) 10d
	90	**HD7120**	2,465	(16) 16d	(6) 16d
14"	5000	**IHF2014-2**	1,500	(12) 10d	(2) 10dx1½"
	6000	**THF23140-2**	2,660	(20) 10d	(6) 10d
	6500	**THF25140-2**	2,660	(20) 10d	(6) 10d
	60	**THF23140-2**	2,660	(20) 10d	(6) 10d
	90	**HD7140**	3,080	(20) 16d	(8) 16d
16"	5000	**IHF2014-2**	1,500	(12) 10d	(2) 10dx1½"
	6000	**THF23160-2**	3,175	(24) 10d	(6) 10d
	6500	**THF25160-2**	3,175	(24) 10d	(6) 10d
	60	**THF23160-2**	3,190	(24) 10d	(6) 10d
	90	**HD7160**	3,695	(24) 16d	(8) 16d
18"	90	**HD7160**	3,695	(24) 16d	(8) 16d
20"	90	**HD7160**	3,695	(24) 16d	(8) 16d

Single Joist — Variable Pitch Connector


TMP

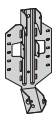
Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	TMP21	1,125	(6) 10d	(4) 10dx1½"
	6000	TMP23	1,375	(6) 10d	(4) 10dx1½"
	6500	TMP25	1,375	(6) 10d	(4) 10dx1½"
11⅞"	5000	TMP21	1,425	(6) 10d	(4) 10dx1½"
	6000	TMP23	1,425	(6) 10d	(4) 10dx1½"
	6500	TMP25	1,425	(6) 10d	(4) 10dx1½"
	60	TMP23	1,425	(6) 10d	(4) 10dx1½"
	90	TMP4	1,705	(6) 10d	(4) 10dx1½"
14"	5000	TMP21	1,475	(6) 10d	(4) 10dx1½"
	6000	TMP23	1,525	(6) 10d	(4) 10dx1½"
	6500	TMP25	1,525	(6) 10d	(4) 10dx1½"
	60	TMP23	1,525	(6) 10d	(4) 10dx1½"
	90	TMP4	1,705	(6) 10d	(4) 10dx1½"
16"	5000	TMP21	1,500	(6) 10d	(4) 10dx1½"
	6000	TMP23	1,550	(6) 10d	(4) 10dx1½"
	6500	TMP25	1,550	(6) 10d	(4) 10dx1½"
	60	TMP23	1,550	(6) 10d	(4) 10dx1½"
	90	TMP4	1,705	(6) 10d	(4) 10dx1½"
18"	90	**TMP4**	1,705	(6) 10d	(4) 10dx1½"
20"	90	**TMP4**	1,705	(6) 10d	(4) 10dx1½"

Single Joist — Adjustable Height


MSH

Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**MSH2022**	1,143	(6) 10d	(4) 10d
	6000	**MSH2322**	1,381	(6) 10d	(4) 10dx1½"
	6500	**MSH322**	1,381	(6) 10d	(4) 10dx1½"
11⅞"	5000	**MSH2022**	1,431	(6) 10d	(4) 10d
	6000	**MSH2318**	1,431	(6) 10d	(4) 10dx1½"
	6500	**MSH318**	1,431	(6) 10d	(4) 10dx1½"
	60	**MSH2318**	1,431	(6) 10d	(4) 10dx1½"
	90	**MSH422**	1,862	(6) 10d	(6) 10d
14"	5000	**MSH2022**	1,550	(6) 10d	(4) 10d
	6000	**MSH2322**	1,550	(6) 10d	(4) 10dx1½"
	6500	**MSH318**	1,550	(6) 10d	(4) 10dx1½"
	60	**MSH2322**	1,550	(6) 10d	(4) 10dx1½"
	90	**MSH422**	1,975	(6) 10d	(6) 10d
16"	5000	**MSH2022**	1,668	(6) 10d	(4) 10d
	6000	**MSH2322**	1,668	(6) 10d	(4) 10dx1½"
	6500	**MSH318**	1,668	(6) 10d	(4) 10dx1½"
	60	**MSH2322**	1,712	(6) 10d	(4) 10dx1½"
	90	**MSH422**	2,175	(6) 10d	(6) 10d

Single Joist — Field Slope and Skew


LSSH

Joist Depth	BCI® Series	Hanger	Capacity (lbs)	Nailing	
				Header	Joist
9½"	5000	**LSSH20-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6000	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6500	**LSSH25-TZ**	1,610	(14) 10d	(12) 10dx1½"
11⅞"	5000	**LSSH20-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6000	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6500	**LSSH25-TZ**	1,610	(14) 10d	(12) 10dx1½"
	60	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	90	**LSSH35-TZ**	1,610	(14) 16d	(12) 10dx1½"
14"	5000	**LSSH20-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6000	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6500	**LSSH25-TZ**	1,610	(14) 10d	(12) 10dx1½"
	60	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	90	**LSSH35-TZ**	1,610	(14) 16d	(12) 10dx1½"
16"	5000	**LSSH20-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6000	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	6500	**LSSH25-TZ**	1,610	(14) 10d	(12) 10dx1½"
	60	**LSSH23-TZ**	1,200	(10) 10d	(7) 10dx1½"
	90	**LSSH35-TZ**	1,610	(14) 16d	(12) 10dx1½"

MiTek®

For more information, contact MiTek Structural Connectors at 1-800-328-5934 or *MiTek-US.com*

NOTES

(1) Flanges on the back of hanger may extend above top of joist.

- **Bold shaded** hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by Boise Cascade.
- Capacities will vary with different nailing criteria and/or support conditions: contact supplier or MiTek Structural Connectors 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 seat hangers and beveled web stiffeners when BCI® joist slope exceeds ¼" per foot.
- Leave 1/16" clearance (⅛" maximum) between the end of the supported joist and the head of the hanger.
- For BCI® joist applications, consult MiTek for capacity reduction.

Support Requirements

- *Support material assumed to be Boise Cascade structural composite lumber or sawn lumber (Douglas fir or southern pine species).*
- Minimum support width for single- and double-joist top mount hangers is 3": (1½" for THO hangers).
- Minimum support width for face mount hangers with 10d and 16d nails is 1¾" and 2", respectively.

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BCI® Joists
Straight and strong, yet lightweight and easy to install, our joists give you flat, stable, quiet floors and strong roofs with crisp ridge lines.

Boise Cascade® Rimboard
Offered in long lengths and depths that match BCI® joists, our rim board product installs quickly and saves you time.

Versa-Lam® LVL Beams and Headers
With superior strength and stability, our Versa-Lam® LVL beams are ideal for floors and roofs, and our headers make installing doors and window a snap.

Versa-Stud® Wall Framing
Facing a tall wall challenge? Versa-Stud wall framing has the length, strength and wind resistance you need. It's also ideal for applications where a straight, stiff wall is critical.

BC Calc® Sizing Software
Whether you're a dealer creating material lists or an architect or builder looking to quickly analyze product options, BC Calc® software makes it easy. What's more, this cloud-based application is freely available to everyone and includes a full line of technical support.

When you put it all together, Boise Cascade's Engineered Wood Products (EWP) and software tools make building strong homes easier, faster, and more profitable for home builders.

FASTER. STRONGER. EASIER.

Limited Lifetime Warranty
All Boise Cascade BCI® joist, Versa-Lam® LVL, and AJS® joist products are covered by a limited lifetime warranty for the expected life of the structure. View the complete warranty on our website.

bc.com/terms-conditions/sales-terms-and-conditions

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