



**Boise Cascade®**  
ENGINEERED WOOD PRODUCTS

# WESTERN SPECIFIER GUIDE

For Products Manufactured in White City, Oregon



Versa-Lam® LVL 2.1 Design Guide information included - Western US.





## The SIMPLE FRAMING SYSTEM® Makes Designing Homes Easier

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

It's the SIMPLE FRAMING SYSTEM®, featuring beams, joists and rim boards that work together as a system, so you spend less time cutting and fitting. In fact, the SIMPLE FRAMING SYSTEM® uses fewer pieces and longer lengths than conventional framing, so you'll complete jobs in less time.

### You'll Build Better Homes with the SIMPLE FRAMING SYSTEM®

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

### Better Framing Doesn't Have to Cost More

Boise Cascade Engineered Wood Products' SIMPLE FRAMING SYSTEM® often costs less

than conventional framing methods when the resulting reduced labor and materials waste are considered. There's less sorting and cost associated with disposing of waste because you order only what you need. Although our longer lengths help your clients get the job done faster, they cost no more.

### Environmentally Sound

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

### What Makes the SIMPLE FRAMING SYSTEM® So Simple?

#### Floor and Roof Framing with BCI® Joists

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

#### Ceilings Framed with BCI® Joists

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

#### Versa-Lam® LVL Beams for Floor and Roof Framing

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

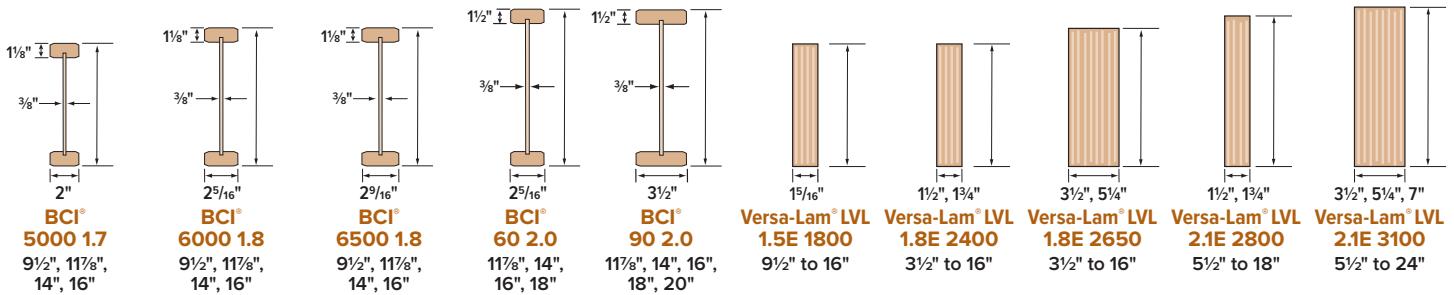
#### Boise Cascade® Rimboard

Boise Cascade Engineered Wood Products offer several engineered rimboard products regionally, including Boise Cascade® Rimboard OSB, Boise Cascade® Rimboard, Versa-Rim® Versa-Strand™ 0.8 and Versa-Lam® LVL 1.5 1800 (check supplier or Boise Cascade EWP representative for availability). These products work with BCI® Joists to provide a solid connection at the critical floor/wall intersection.

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# Western Product Profiles



Product depths offered are listed below the product name.

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

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



## BCI® Joist Architectural Specifications

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

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

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

**Design:** The BCI® Joists shall be sized and detailed to fit the dimensions and loads indicated on the plans. All designs shall be in accordance with allowable values and section properties developed in accordance with ASTM D5055 and listed in the governing code evaluation service's report.

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

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

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

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

**Codes:** The BCI® Joists shall be evaluated by a model code evaluation service.

# 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.**

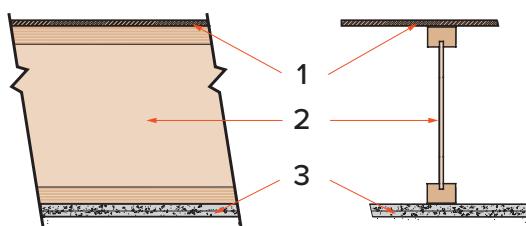
The floor span tables listed below offer three very different performance options, based on performance requirements of the homeowner.

Joist Depth	BCI® Joist Series	★★★ THREE STAR ★★					★★★★ FOUR STAR ★★★					CAUTION	★ MINIMUM STIFFNESS ALLOWED BY CODE ★	CAUTION		
		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"
11½"	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"

- Span table is based on a residential floor load of 40 psf live load and 10 psf dead load (12 psf dead load for 90 2.0 joists).
- Span values assume  $\frac{23}{32}$ " minimum plywood/OSB rated sheathing is glued and nailed to joists for composite action (joists spaced at 32" o.c. require sheathing rated for such spacing -  $\frac{7}{8}$ " plywood/OSB).
- Span values represent the most restrictive of simple or multiple span applications. Analyze multiple span joists with BC Calc® sizing software if the length of any span is less than half the length of an adjacent span.
- Span values are the maximum allowable clear distance between supports.

- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16" inches and less (18" & 20" 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

### FIRE ASSEMBLY COMPONENTS

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

### SOUND ASSEMBLY COMPONENTS

When constructed with resilient channels

- Add carpet & pad to fire assembly:
- Add  $\frac{3}{2}$ " glass fiber insulation to fire assembly:
- Add an additional layer of minimum  $\frac{5}{8}$ " sheathing and  $9\frac{1}{2}$ " glass fiber insulation to fire assembly:

STC=54
STC=55
STC=61
IIC=50

or

or

See the US version of the Boise Cascade Fire Design & Installation Guide for specific assembly information and other fire resistive options or contact your local Boise Cascade representative.

## BCI® Joists

### NOTE

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

**NO MIDSPAN BRIDGING IS REQUIRED FOR BCI® JOISTS**

**FOR INSTALLATION STABILITY,**  
Temporary strut lines (1x4 min.) 8' on center max.  
Fasten at each joist with 2-8d nails minimum.

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

**F01** **F02**  
BCI® rim joist,  
see page 6.

**F07**  
Boise Cascade® Rimboard,  
see pages 6 and 25.

For load bearing cantilever details,  
see page 9.

**F06** **F09**

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

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

Versa-Lam® LVL header  
or an BCI® header.

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

**F15**

See page 7 for  
allowable hole sizes  
and location.

**F27A**

Versa-Lam® LVL beam.

Endwall blocking as required per  
governing building code.

BCI® Blocking is required when joists  
are cantilevered.

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

only for applications that assure no exposure to weather or the elements and an environment that is free from moisture from any source, or any pest, organism or substance which degrades or damages wood or glue bonds. Failure to correctly store, use or install Versa-Lam® LVL, ALLJOIST® and BCI® Joist in accordance with the Boise Cascade EWP Installation Guide will void the limited warranty.

## SAFETY WARNING

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

- Build a braced end wall at the end of the bay, or permanently install the first eight feet of BCI® Joists and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of BCI® Joists at the end of the bay.
- All hangers, BCI® rim joists, rim boards, BCI® blocking panels, and x-bracing must be completely installed and properly nailed as each BCI® Joist is set.
- Install temporary 1x4 strut lines at no more than eight feet on center as additional BCI® Joists are set. Nail the strut lines to the sheathed area, or braced end wall, and to each BCI® Joist with two 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 inch of true alignment before attaching strut lines and sheathing.
- Remove the temporary strut lines only as required to install the permanent sheathing.
- Failure to install temporary bracing may result in sideways buckling or roll-over under light construction loads.
- Do not stack construction materials (sheathing, drywall, etc) in the middle of BCI® Joist spans, contact Boise Cascade EWP Engineering for proper storage and shoring information.

## PRODUCT HANDLING TO AND AT JOB SITES

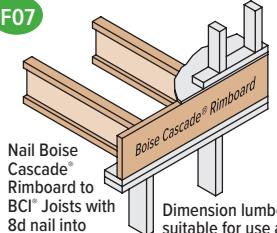
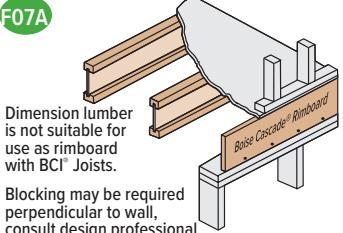
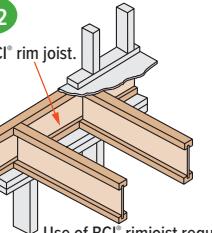
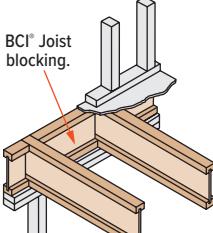
There are some differences between engineered wood products and traditional lumber products in terms of product handling: Avoid handling and storing BCI® joists in the flat direction. Versa-Lam® LVL is denser and due to the coating applied to the surface, can be more apt to sliding. Please consider these differences when transporting and handling engineered wood products.



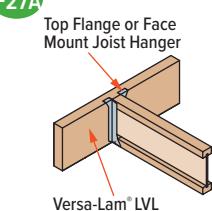
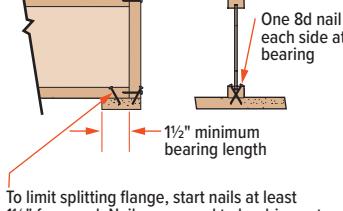
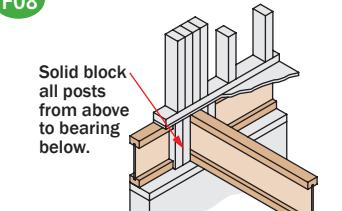
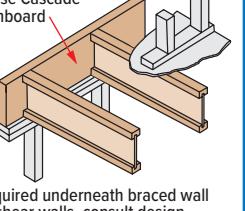
# Floor Framing Details

Additional floor framing details available with BC Framer® software

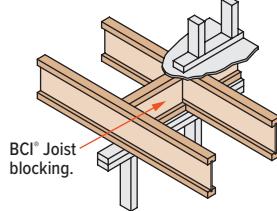
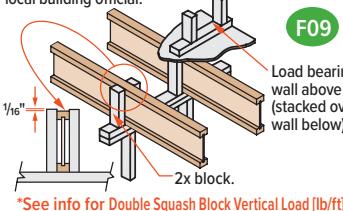
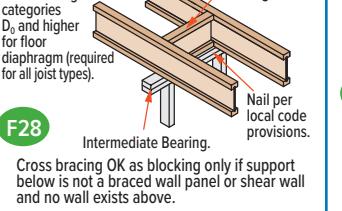
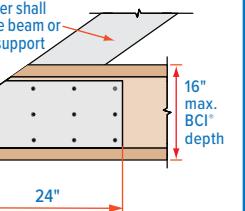
## END BEARING DETAILS

			
<b>F07</b> Nail Boise Cascade® Rimboard to BCI® Joists with 8d nail into each flange.	<b>F07A</b> 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.	<b>F02</b> BCI® rim joist.  Use of BCI® rimjoist requires 2x6 wall for minimum joist bearing.	<b>F01</b> BCI® Joist blocking.

			
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## INTERMEDIATE BEARING DETAILS

			
<b>F06</b> For load bearing wall above (stacked over wall below).  BCI® Joist blocking.	<b>F09</b> Blocking may be required at intermediate bearings for floor diaphragm per IRC in high seismic areas, consult local building official.  Load bearing wall above (stacked over wall below) 1/16" min. gap between joist and blocking. 2x block.	<b>F28</b> Floor Joist Blocking per IRC® 502.7 Required in seismic design categories D <sub>1</sub> and higher for floor diaphragm (required for all joist types).  BCI® Joist or Boise Cascade® Rimboard Blocking. Nail per local code provisions.  Intermediate Bearing.  Cross bracing OK as blocking only if support below is not a braced wall panel or shear wall and no wall exists above.	<b>F14</b> BCI® Joist Slope Cut Reinforcement. Detail below restores original allowable shear/reaction value to cut end of BCI® joist. BCI® Joist shall not be used as a collar or rafter tension tie.  2 x 6 min. rafter. Rafter shall be supported by ridge beam or other upper bearing support  Heel Depth (see table below) 6 min. 12 max. BCI® depth 24"

## LATERAL SUPPORT

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

## MINIMUM BEARING LENGTH FOR BCI® JOISTS

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

## NAILING REQUIREMENTS

- BCI® rim joist, rim board or closure panel to BCI® joist:
  - Rims or closure panel 1 1/16" inches thick and less: 2-8d nails, one each in the top and bottom flange.
  - BCI® 5000 rim joist: 2-10d box nails, one each in the top and bottom flange.
  - BCI® 6000/60 rim joist: 2-16d box nails, one each in the top and bottom flange.
  - BCI® 6500/90 rim joist: Toe-nail top flange to rim joist with 2-10d box nails, one each side of flange.
- BCI® rim joist, rim board or BCI® blocking panel to support:
  - Min. 8d nails @ 6" o.c. per IRC®.
  - Connection per design professional of record's specification for shear transfer.
- BCI® joist to support:
  - 2-8d nails, one on each side of the web, placed 1 1/2" inches minimum from the end of the BCI® Joist to limit splitting.
- Sheathing to BCI® joist:
  - Prescriptive residential floor sheathing nailing requires 8d common nails @ 6" o.c. on 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®.
- Maximum bracing spacing for full lateral stability: 18" for BCI® 5000, 24" for larger BCI® joist series.
- 14 gauge staples may be substituted for 8d nails if the staples penetrate at least 1 inch into the joist.
- Wood screws may be acceptable, contact local building official and/or Boise Cascade EWP Engineering for further information.

## BACKER AND FILLER BLOCK DIMENSIONS

Series	Backer Block Thickness	Filler Block Thickness
5000 1.7	3/4" or 7/8" wood panels	Two 3/4" wood panels or 2 x _
6000 1.8	1 1/8" or two 1 1/2" wood panels	2 x _ + 7/16" or 1/2" wood panel
6500 1.8	1 1/8" or two 3/4" wood panels	2 x _ + 5/8" or 3/4" wood panel
60 2.0	1 1/8" or two 1 1/2" wood panels	2 x _ + 7/16" or 1/2" wood panel
90 2.0	2 x _ lumber	Double 2 x _ lumber

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

Size	Joist Spacing [in]			
	12	16	19.2	24
2x4	4463	3347	2789	2231
2x6	7013	5259	4383	3506

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

## WEB STIFFENER REQUIREMENTS

- See Web Stiffener Requirements on page 9.

## PROTECT BCI® JOISTS FROM THE WEATHER

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

## BCI® RIM JOISTS AND BLOCKING

Depth [in]	Series	Vertical Load Capacity (plf)	
		No W.S. <sup>(1)</sup>	W.S. <sup>(2)</sup>
9 1/2"	5000 1.7, 6000 1.8, 6500 1.8	2300	N/A
11 1/8"	5000 1.7, 6000 1.8, 6500 1.8	2150	N/A
14"	60 2.0, 90 2.0	2500	N/A
14"	5000 1.7, 6000 1.8, 6500 1.8	2000	N/A
14"	60 2.0, 90 2.0	2400	N/A
16"	6000 1.8, 6500 1.8	1900	2500
16"	60 2.0, 90 2.0	2300	2700
18"	60 2.0, 90 2.0	N/A	2700
20"	90 2.0	N/A	2700

(1) No web stiffeners required.

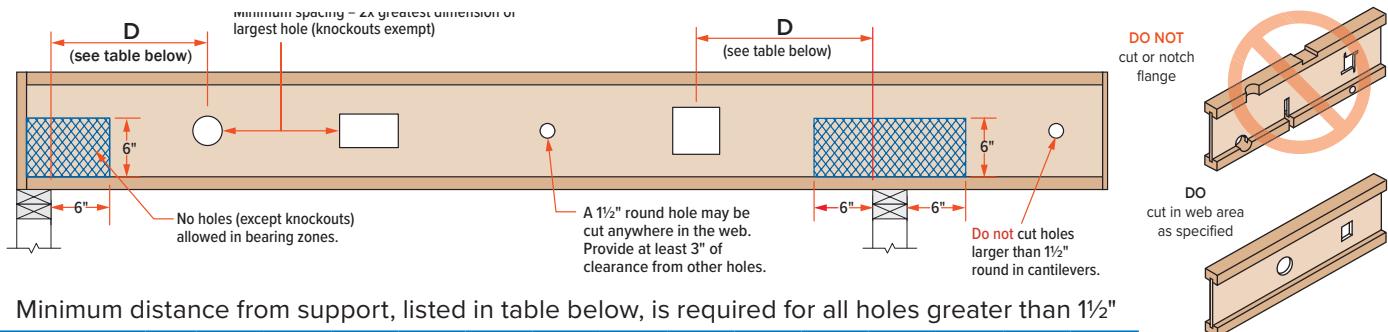
(2) Web stiffeners required at each end of blocking, values not applicable for rim joists.

N/A: Not applicable

# BCI® Joist Hole Location & Sizing

7

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



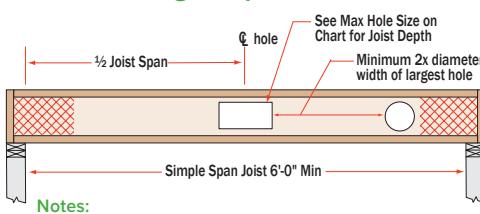
Minimum distance from support, listed in table below, is required for all holes greater than 1½"

MINIMUM DISTANCE (D) FROM ANY SUPPORT TO THE CENTERLINE OF THE HOLE														
Round Hole Diameter [in]	2	3	4	5	6	7	8	8½	10	11	12	13	14	15
Rectangular Hole Side [in]	-	-	-	3	5	7	-	-	-	-	-	-	-	-
Any 9½" Span Joist	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"	2'-2"	3'-5"	4'-8"	5'-11"	7'-2"							
Round Hole Diameter [in]	2	3	4	5	6	7	8	8½	10	11	12	13	14	15
Rectangular Hole Side [in]	-	-	-	2	3	5	7	8	-	-	-	-	-	-
Any 11½" Span Joist	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 [in]	2	3	4	5	6	7	8	8½	10	11	12	13	14	15
Rectangular Hole Side [in]	-	-	-	-	2	3	5	6	8	9	-	-	-	-
Any 14" Span Joist	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 [in]	2	3	4	5	6	7	8	8½	10	11	12	13	14	15
Rectangular Hole Side [in]	-	-	-	-	-	2	3	5	6	8	9	10	-	-
Any 16" Span Joist	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'-11"	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 [in]	2	3	4	5	6	7	8	8½	10	11	12	13	14	15
Rectangular Hole Side [in]	-	-	-	-	-	-	2	3	5	6	8	9	10	-
Any 18" BCI® 90 2.0 Span Joist	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'-4"	1'-11"	2'-7"	3'-2"	3'-8"	4'-5"	5'-0"	5'-7"	6'-3"	6'-10"
	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"
	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"
20" BCI® 90 2.0 Span Joist	8	1'-0"	1'-1"	1'-4"	2'-5"	3'-5"	4'-6"	5'-7"	6'-6"	7'-9"	8'-9"	9'-10"	10'-11"	12'-0"
	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"
	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"
	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"
	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"
Round Hole Diameter [in]	2	3	4	5	6	7	8	8½	10	11	12	13	14	15
Rectangular Hole Side [in]	-	-	-	-	-	-	2	3	5	6	7	8	10	-

## Large Rectangular Holes in BCI® Joists

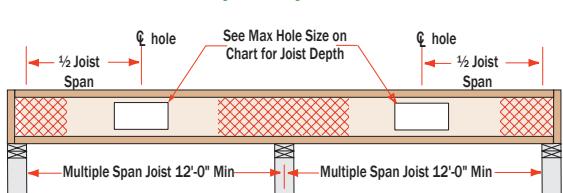
Hole size table based on maximum uniform load of 40 psf live load and 10 psf dead load, at maximum spacing of 24" on-center.

### Single Span Joist



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

### Multiple Span Joist



# Reinforced Load Bearing Cantilever Table

**KEY TO TABLE**

0 No Reinforcement Required

WS Web Stiffeners at Support

BCI® Joists

1 Web Stiffeners Plus One Reinforcer

2 Web Stiffeners Plus Two Reinforcers

X Use Deeper Joists or Closer Spacing

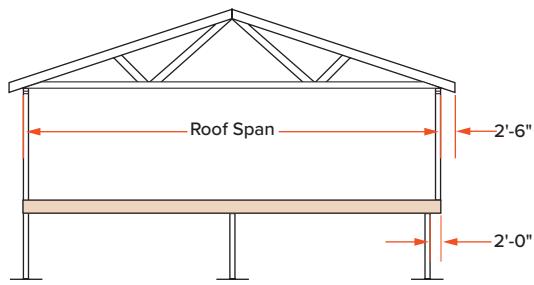
Joist Depth [in]	Joist Series	Roof Truss Span [ft]	Roof Total Load [psf]											
			35			45			55			Joist Spacing [in]		
			16	19.2	24	16	19.2	24	16	19.2	24	16	19.2	24
9½"	5000 1.7	24	0	0	0	0	0	X	0	X	X			
		26	0	0	0	0	0	X	0	X	X			
		28	0	0	X	0	0	X	0	X	X			
		30	0	0	X	0	X	X	X	X	X			
		32	0	0	X	0	X	X	X	X	X			
		34	0	0	X	0	X	X	X	X	X			
		36	0	0	X	0	X	X	X	X	X			
	6000 1.8	38	0	X	X	X	X	X	X	X	X			
		40	0	X	X	X	X	X	X	X	X			
		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	0	X			
		30	0	0	0	0	0	0	X	0	1	X		
		32	0	0	0	0	0	0	X	0	X	X		
	6500 1.8	34	0	0	0	0	0	0	X	0	X	X		
		36	0	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			
11½"	5000 1.7	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	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			
	6000 1.8	38	0	0	1	0	WS	X	0	WS	X			
		40	0	0	X	0	X	X	X	X	X			
		24	0	0	0	0	0	0	0	0	1			
		26	0	0	0	0	0	0	0	0	1			
		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	0	WS	X		
	6500 1.8	34	0	0	0	0	0	0	1	0	1	X		
		36	0	0	0	WS	0	0	X	0	1	X		
		38	0	0	0	WS	0	0	X	0	1	X		
		40	0	0	1	0	WS	X	0	1	X			
		24	0	0	0	0	0	0	0	0	0	1		
		26	0	0	0	0	0	0	0	0	0	1		
		28	0	0	0	0	0	0	WS	0	0	X		
13½"	60 2.0	30	0	0	0	0	0	1	0	0	X			
		32	0	0	0	0	0	1	0	0	X			
		34	0	0	0	0	0	0	X	0	1	X		
		36	0	0	0	0	0	X	0	1	X			
		38	0	0	0	0	0	X	0	1	X			
		40	0	0	1	0	WS	X	0	X	X			
		24	0	0	0	0	0	0	0	0	0	1		
	90 2.0	26	0	0	0	0	0	0	0	0	0	0		
		28	0	0	0	0	0	0	0	0	0	0		
		30	0	0	0	0	0	0	0	0	0	0		
		32	0	0	0	0	0	0	0	0	0	0		
		34	0	0	0	0	0	0	0	0	0	1		
		36	0	0	0	0	0	0	0	0	0	1		
		38	0	0	0	0	0	0	0	0	0	1		

- Cut 48" long reinforcing bars to match the joist depth. Use min. 23/32" plywood/OSB-rated sheathing, Exposure 1, 48/24 Span Rating panels. The face grain must be horizontal (measure the 48" dimension along the long edge of the panel).
- Fasten the reinforcement to the joist flanges with 8d nails at 6" o.c. When reinforcing both sides, stagger the nails to avoid splitting the joist flanges.
- Attach web stiffeners per intermediate *Web Stiffener Nailing Schedule* on page 9.
- Use the BC Calc® 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.

Joist Depth [in]	Joist Series	Roof Truss Span [ft]	Roof Total Load [psf]											
			35			45			55			Joist Spacing [in]		
			16	19.2	24	16	19.2	24	16	19.2	24	16	19.2	24
14"	5000 1.7	24	0	0	0	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	0	0	0	0	0	0	1
		30	0	0	0	0	0	0	0	0	0	0	0	WS
		32	0	0	0	0	0	0	0	0	0	0	0	1
		34	0	0	0	0	0	0	0	0	0	0	0	WS
		36	0	0	0	0	0	0	0	0	0	0	0	WS
	6000 1.8	38	0	0	0	0	0	0	0	0	0	0	0	1
		40	0	0	0	0	0	0	0	0	0	0	0	1
		24	0	0	0	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	0	0	0	0	0	0	WS
		30	0	0	0	0	0	0	0	0	0	0	0	1
		32	0	0	0	0	0	0	0	0	0	0	0	WS
16"	60 2.0	34	0	0	0	0	0	0	0	0	0	0	0	WS
		36	0	0	0	0	0	0	0	0	0	0	0	WS
		38	0	0	0	0	0	0	0	0	0	0	0	WS
		40	0	0	0	0	0	0	0	0	0	0	0	WS
		24	0	0	0	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	0	0	0	0	0	0	WS
	90 2.0	30	0	0	0	0	0	0	0	0	0	0	0	WS
		32	0	0	0	0	0	0	0	0	0	0	0	WS
		34	0	0	0	0	0	0	0	0	0	0	0	WS
		36	0	0	0	0	0	0	0	0	0	0	0	WS
		38	0	0	0	0	0	0	0	0	0	0	0	WS
		40	0	0	0	0	0	0	0	0	0	0	0	WS

# Reinforced Load Bearing Cantilever Detail

9



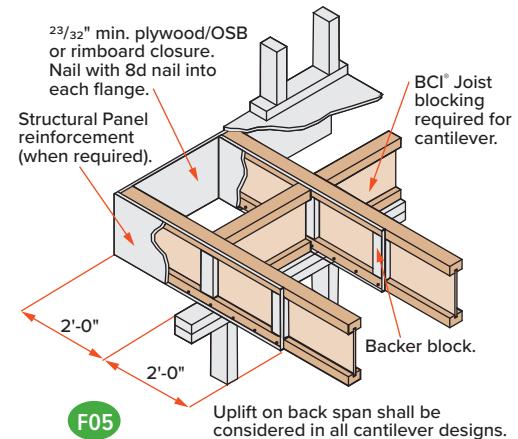
- The tables and details on pages 8 and 9 indicate the type of reinforcements, if any, that are required for load-bearing cantilevers up to a maximum length of 2'-0". Cantilevers longer than 2'-0" cannot be reinforced.

**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 BC Calc® Analysis)

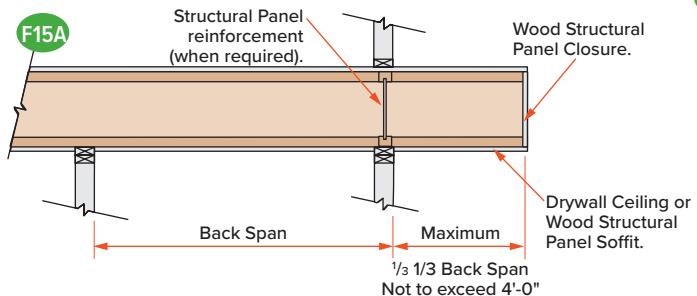
•  $\frac{23}{32}$ " Min. x 48" long plywood / OSB rated sheathing must match the full depth of the BCI® Joist. Nail to the BCI® Joist with 8d nails at 6" o.c. and nail with 4-8d nails into backer block. When reinforcing both sides, stagger nails to limit splitting. Install with horizontal face grain.

- The tables on page 8 assume a wall weight of 100 plf, in addition to the roof loading shown. Applications with loading that exceeds the loads shown shall be analyzed with BC Calc® software.
- These requirements assume 100 PLF wall load. Additional support may be required for other loadings, see BC Calc® software.



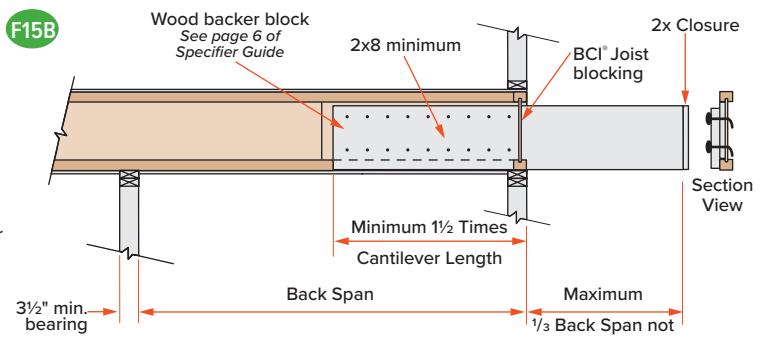
## Non-Load Bearing Wall Cantilever Details

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



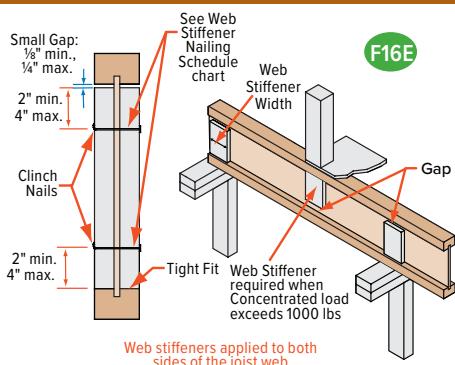
- Analyze BCI® Joist cantilever condition with BC Calc® software.

Fasten the 2x8 minimum to the BCI® Joist by nailing through the backer block and joist web with 2 rows of 10d nails at 6" on-center. Clinch all nails. For BCI® 90 joists, nail each side with 2 rows (4 rows total) of 16d nails at 6" on-center.



- 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. Lumber joist shall be sloped.

## Web Stiffener Requirements



### NOTES

- Web stiffeners are optional except as noted below.
- Web stiffeners are always required for all 18" and 20" BCI® Joists at all bearing locations.
- Web stiffeners are always required in hangers that do not extend up to support the top flange of the BCI® Joist. Web stiffeners may be required with certain sloped or skewed hangers or to achieve uplift values. Refer to the hanger manufacturer's installation requirements.
- Web stiffeners are always required in certain roof applications. See Roof Framing Details on page 14.
- Web stiffeners are always required under concentrated loads that exceed 1000 pounds. Install the web stiffeners snug to the top flange in this situation. Follow the nailing schedule for intermediate bearings.
- Web stiffeners may be cut from structural rated wood panels, engineered rimboard or 2x lumber (BCI® 90 only).
- For Structural Capacity: Web stiffeners needed to increase the BCI® Joist's reaction capacity at a specific bearing location.
- Lateral Restraint in Hanger: Web stiffeners required when hanger does not laterally support the top flange (e.g., adjustable height hangers). Web stiffeners may be of multiple thickness (e.g., BCI® 6500, double 1/2" panel OK).
- Web stiffeners may be used to increase allowable reaction values. See BCI® Design Properties on page 24 or the BC Calc® software.

Web Stiffener Specifications			
BCI® Joist Series	For Structural Capacity (Min. Thick)	Lateral Restraint in Hanger	Minimum Width
5000 1.7	5/8"	3/4"	2 <sup>5</sup> / <sub>16</sub> "
6000 1.8	3/4"	7/8"	2 <sup>5</sup> / <sub>16</sub> "
6500 1.8	3/4"	1" or 1 <sup>1</sup> / <sub>8</sub> "	2 <sup>5</sup> / <sub>16</sub> "
60 2.0	3/4"	7/8"	2 <sup>5</sup> / <sub>16</sub> "
90 2.0	2x4 lumber (vertical)		

BCI® Joist Series	Joist Depth	Bearing Location	
		End	Intermediate
5000 1.7	9 1/2"	2-8d	2-8d
	11 7/8"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6000 1.8	9 1/2"	2-8d	2-8d
	11 7/8"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6500 1.8	9 1/2"	2-8d	2-8d
	11 7/8"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
60 2.0	11 7/8"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
	17 1/2"	3-16d	3-16d
90 2.0	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 Series 2" Flange Width						BCI® 6000 1.8 Series 2½" Flange Width							
	9½" BCI® 5000 1.7		11¾" BCI® 5000 1.7		14" BCI® 5000 1.7		16" BCI® 6000 1.8		9½" BCI® 6000 1.8		11¾" BCI® 6000 1.8		14" BCI® 6000 1.8	
	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														

- 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 inches and less. 18 and 20 inch joists require web stiffeners.
- For assistance with floor design, consult the section *About Floor Performance* on page 4.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.

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

**100% Load Duration**

Span Length	BCI® 6500 1.8 Series 2 $\frac{9}{16}$ " Flange Width								BCI® 60 2.0 Series 2 $\frac{5}{16}$ " Flange Width					
	9 $\frac{1}{2}$ " BCI® 6500 1.8		11 $\frac{7}{8}$ " BCI® 6500 1.8		14" BCI® 6500 1.8		16" BCI® 6500 1.8		11 $\frac{7}{8}$ " BCI® 60 2.0		14" BCI® 60 2.0		16" BCI® 60 2.0	
	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														



# Floor Load Tables

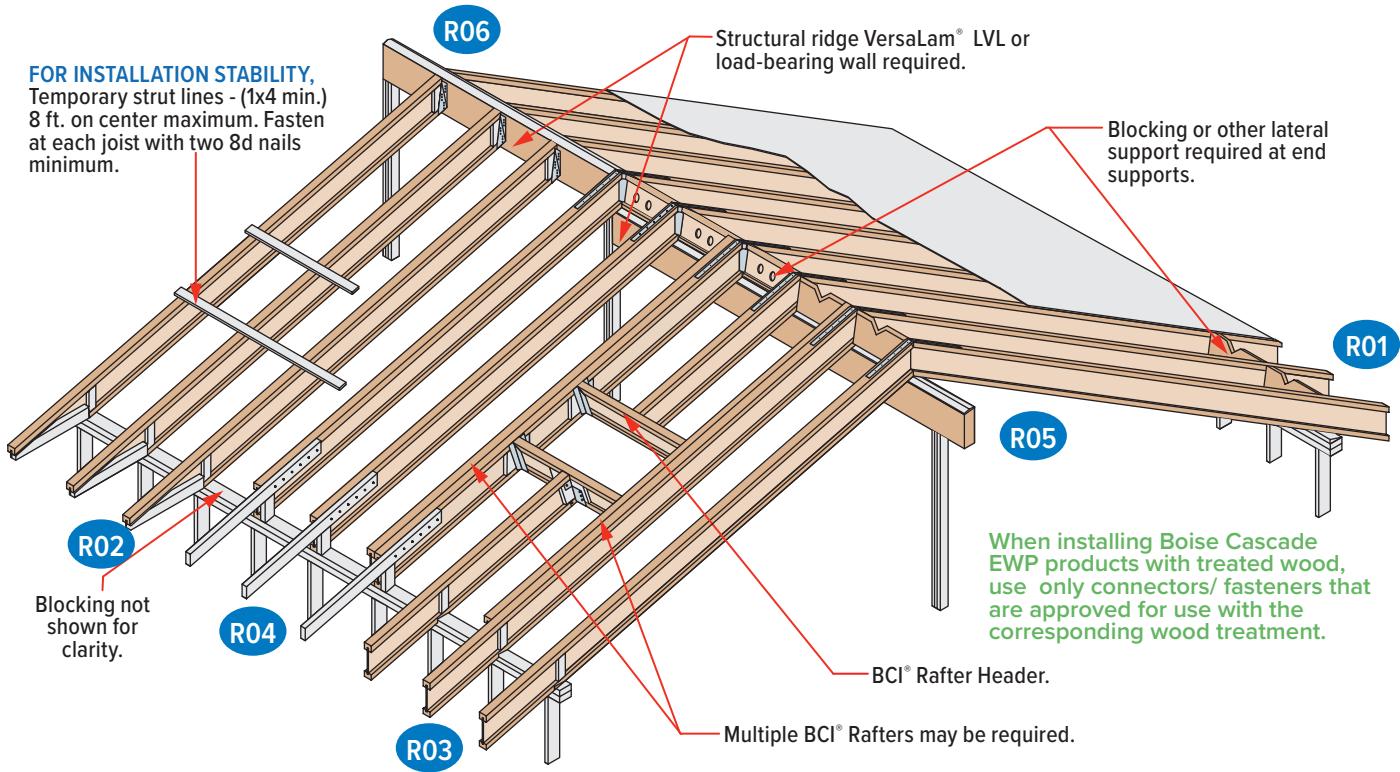
## Allowable Uniform Floor Load (in pounds per lineal foot [PLF])

### 100% Load Duration

Span Length	BCI® 90 2.0 Series 3½" Flange Width									
	11⅞" BCI® 90 2.0		14" BCI® 90 2.0		16" BCI® 90 2.0		18" BCI® 90 2.0		20" BCI® 90 2.0	
	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	98	129	-	130	-	158	-	163
22	61	122	86	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

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

## BCI® Rafters



### SAFETY WARNING

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

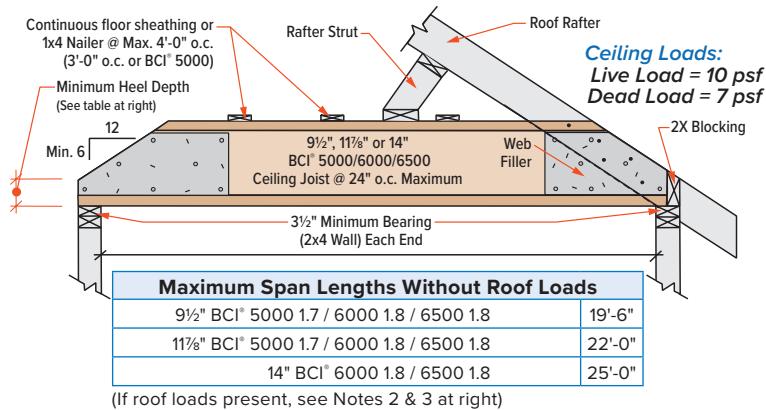
- Build a braced end wall at the end of the bay, or permanently install the first eight feet of BCI® Joists and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of BCI® Joists at the end of the bay.
- All hangers, BCI® rim joists, rim boards, BCI® blocking panels, and x-bracing must be completely installed and properly nailed as each BCI® Joist is set.
- Install temporary 1x4 strut lines at no more than eight feet on center as additional BCI® Joists are set. Nail the strut lines to the sheathed area, or braced end wall, and to each BCI® Joist with two 8d nails.

**SERIOUS ACCIDENTS CAN RESULT FROM INSUFFICIENT ATTENTION TO PROPER BRACING DURING CONSTRUCTION. ACCIDENTS CAN BE AVOIDED UNDER NORMAL CONDITIONS BY FOLLOWING THESE GUIDELINES:**

- The ends of cantilevers must be temporarily secured by strut lines on both the top and bottom flanges.
- Straighten the BCI® Joists to within  $\frac{1}{2}$  inch of true alignment before attaching strut lines and sheathing.
- Remove the temporary strut lines only as required to install the permanent sheathing.
- Failure to install temporary bracing may result in sideways buckling or roll-over under light construction loads.

### BCI® Ceiling Joist with Bevel End Cut (For Limited-Access Attics Only)

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



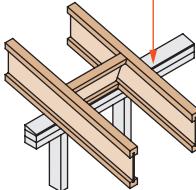
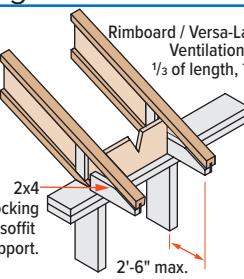
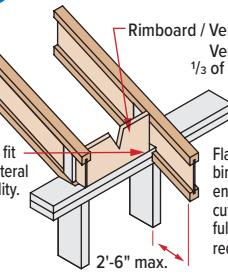
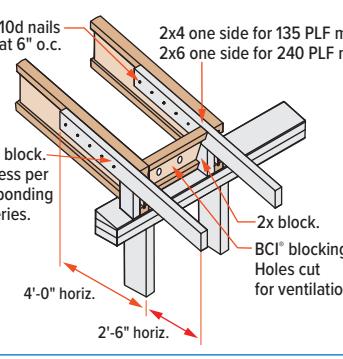
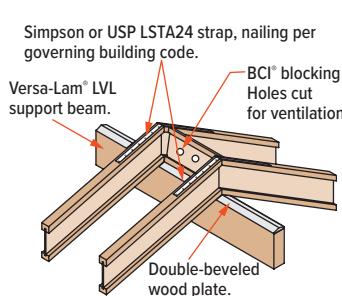
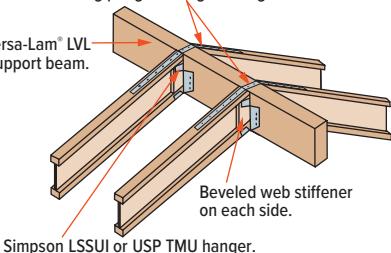
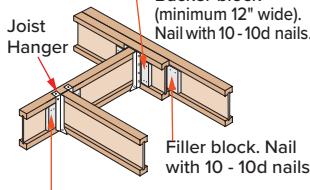
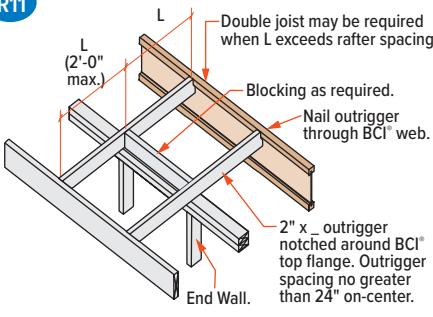
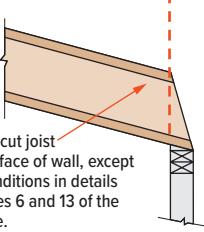
Minimum Heel Depths	Joist Depth	End Wall	
	2 x 4	2 x 6	
	9 1/2"	2 1/2"	1 1/2"
	11 1/8"	3 1/2"	2 1/2"
14"		4 1/2"	3 1/2"

#### Notes:

- Detail is to be used only for ceiling joists with no access to attic space.
- 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.
- Nail roof rafter to BCI® top flange with 1- 10d (3" long) box or larger nail.
- 1x4 nailers must be continuous and nailed to a braced end wall.
- Install a web filler on each side of BCI® Joist at beveled ends. Nail roof rafter to BCI® Joist per building code requirements for ceiling joist to roof rafter connection.

# Roof Framing Details

Additional roof framing details available with BC Framer® software

<b>R01</b>  <p>2x beveled plate for slope greater than <math>\frac{1}{4}/12</math>.</p> <p>Simpson VPA or USP TMP connectors or equal can be used in lieu of beveled plate for slopes from <math>3/12</math> to <math>12/12</math>.</p>	<b>R02</b>  <p>Rimboard / Versa-Lam® LVL blocking. Ventilation "V" cut: <math>\frac{1}{3}</math> of length, <math>\frac{1}{2}</math> of depth</p> <p>2x4 blocking for soffit support.</p> <p>2'-6" max.</p> <p>Flange of BCI® Joists may be birdsmouth cut only at the low end of the joist. Birdsmouth cut BCI® Joist flange must bear fully on plate, web stiffener required each side. Bottom flange shall be fully supported.</p>	<b>R03</b>  <p>Rimboard / Versa-Lam® LVL blocking. Ventilation "V" cut: <math>\frac{1}{3}</math> of length, <math>\frac{1}{2}</math> of depth</p> <p>Tight fit for lateral stability.</p> <p>Flange of BCI® Joists may be birdsmouth cut only at the low end of the joist. Birdsmouth cut BCI® Joist flange must bear fully on plate, web stiffener required each side.</p> <p>2'-6" max.</p>
<b>R04</b>  <p>10d nails at 6" o.c.</p> <p>2x4 one side for 135 PLF max. 2x6 one side for 240 PLF max.</p> <p>Backer block. Thickness per corresponding BCI® series.</p> <p>2x block.</p> <p>BCI® blocking Holes cut for ventilation.</p> <p>4'-0" horiz.</p> <p>2'-6" horiz.</p>	<b>R05</b>  <p>Simpson or USP LSTA24 strap, nailing per governing building code.</p> <p>Versa-Lam® LVL support beam.</p> <p>BCI® blocking Holes cut for ventilation.</p> <p>Double-bevel wood plate.</p> <p>Blocking on both sides of ridge may be required for shear transfer per design professional of record.</p>	<b>R06</b>  <p>Versa-Lam® LVL support beam.</p> <p>Beveled web stiffener on each side.</p> <p>Simpson LSSU1 or USP TMU hanger.</p>
<b>R07</b>  <p>Joist Hanger</p> <p>Backer block (minimum 12" wide). Nail with 10-10d nails.</p> <p>Filler block. Nail with 10 - 10d nails.</p> <p>Backer block required where top flange joist hanger load exceeds 250 lbs. Install tight to top flange.</p>	<b>R11</b>  <p>Double joist may be required when L exceeds rafter spacing.</p> <p>L (2'-0" max.)</p> <p>Blocking as required.</p> <p>Nail outrigger through BCI® web.</p> <p>2" x _ outrigger notched around BCI® top flange. Outrigger spacing no greater than 24" on-center.</p> <p>End Wall.</p>	<b>DN05</b>  <p>DO NOT bevel-cut joist beyond inside face of wall, except for specific conditions in details shown on pages 6 and 13 of the Specifier Guide.</p>

## LATERAL SUPPORT

- BCI® Joists must be laterally supported at end supports (including supports adjacent to overhangs) with hangers, rimboard, 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:  $\frac{1}{2}$ " for all BCI® Joists.  $3\frac{1}{2}$ " is required at cantilever and intermediate supports.
- Longer bearing lengths allow higher reaction values. Refer to the building code evaluation report or the BC Calc® software.

## NAILING REQUIREMENTS

- BCI® rim joist, rim board or closure panel to BCI® joist:
  - Rims or closure panel  $1\frac{1}{4}$  inches thick and less: 2-8d nails, one each in the top and bottom flange.
  - BCI® 5000 rim joist: 2-10d box nails, one each in the top and bottom flange.
  - BCI® 6000/60 rim joist: 2-16d box nails, one each in the top and bottom flange.
  - BCI® 6500/90 rim joist: Toe-nail top flange to rim joist with 2-10d box nails, one each side of flange.
- BCI® rim joist, rim board or BCI® blocking panel to support:
  - Min. 8d nails @ 6" o.c. per IRC®.
  - Connection per design professional of record's specification for shear transfer.
- BCI® joist to support:
  - 2-8d nails, one on each side of the web, placed  $1\frac{1}{2}$  inches minimum from the end of the BCI® Joist to limit splitting.

## Sheathing to BCI® joist:

- Prescriptive residential floor sheathing nailing requires 8d common nails @ 6" o.c. on 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®.
- Maximum nail spacing for minimum lateral stability: 18" for BCI® 5000, 24" for larger BCI® joist series.
- 14 gauge staples may be substituted for 8d nails if the staples penetrate at least 1 inch into the joist.
- Wood screws may be acceptable, contact local building official and/or Boise Cascade EWP Engineering for further information.

## BACKER AND FILLER BLOCK DIMENSIONS

Series	Backer Block Thickness	Filler Block Thickness
5000 1.7	$\frac{3}{4}$ " or $\frac{7}{8}$ " wood panels	Two $\frac{3}{4}$ " wood panels or 2 x _
6000 1.8	$1\frac{1}{8}$ " or two $\frac{1}{2}$ " wood panels	2 x _ + $\frac{7}{16}$ " or $\frac{1}{2}$ " wood panel
6500 1.8	$1\frac{1}{8}$ " or two $\frac{5}{8}$ " wood panels	2 x _ + $\frac{5}{8}$ " or $\frac{3}{4}$ " wood panel
60 2.0	$1\frac{1}{8}$ " or two $\frac{1}{2}$ " wood panels	2 x _ + $\frac{7}{16}$ " or $\frac{1}{2}$ " wood panel
90 2.0	2 x _ lumber	Double 2 x _ lumber

- Cut backer and filler blocks to a maximum depth equal to the web depth minus  $\frac{1}{4}$ " to avoid a forced fit.

## WEB STIFFENER REQUIREMENTS

- See Web Stiffener Requirements on page 9.

## PROTECT BCI® JOISTS FROM THE WEATHER

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

## MAXIMUM SLOPE

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

## VENTILATION

- The  $1\frac{1}{2}$  inch, pre-stamped knock-out holes spaced at 12 inches on center along the BCI® Joist may all be knocked out and used for cross ventilation. Deeper joists that what is structurally needed may be advantageous in ventilation design. Consult local building official and/or ventilation specialist for specific ventilation requirements.

## BIRDSMOUTH CUTS

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

# Roof Span Tables

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

## 115% and 125% Load Duration

		BCI® 5000 1.7 Series 2" Flange Width										BCI® 6000 1.8 Series 2 <sup>5</sup> / <sub>16</sub> " Flange Width												
		9 <sup>1</sup> / <sub>2</sub> " BCI® 5000 1.7					11 <sup>7</sup> / <sub>8</sub> " BCI® 5000 1.7					14" BCI® 5000 1.7					9 <sup>1</sup> / <sub>2</sub> " BCI® 6000 1.8					14" BCI® 6000 1.8		
		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'-4"	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'-9"	20'-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"	19'-0"	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"

- Table values are limited by shear, moment, total load deflection equal to L/180 and live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Table values represent the most restrictive of simple or multiple span applications. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16 inches and less. 18 and 20 inch 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 1/4" over 12" to minimize ponding.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

# Roof Span Tables

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

## 115% and 125% Load Duration

		BCI® 6500 1.8 Series 2 <sup>9/16</sup> " Flange Width													
		9 <sup>1/2</sup> " BCI® 6500 1.8			11 <sup>1/8</sup> " BCI® 6500 1.8			14" BCI® 6500 1.8			16" BCI® 6500 1.8				
		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'-3"	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"
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'-4"	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"



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

## 115% and 125% Load Duration

		BCI® 60 2.0 Series 2 <sup>9</sup> / <sub>16</sub> " Flange Width										
		11 <sup>7</sup> / <sub>8</sub> " BCI® 60 2.0			14" BCI® 60 2.0			16" BCI® 60 2.0				
		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"

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

# Roof Span Tables

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

## 115% and 125% Load Duration

		BCI® 90 2.0 Series 3½" Flange Width																
		11½" BCI® 90 2.0		14" BCI® 90 2.0			16" BCI® 90 2.0			18" BCI® 90 2.0			20" BCI® 90 2.0					
		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	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"
16" o.c.	Non-Snow 125%	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"
	Snow 115%	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"
		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"
		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"
19.2" o.c.	Non-Snow 125%	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"
	Snow 115%	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"	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"
		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"
		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"
24" o.c.	Non-Snow 125%	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"
	Snow 115%	50	15	24'-11"	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"
		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"



## 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  $3\frac{1}{2}$ " per foot or less.  
For steeper slopes, see pages 15-18.

Span Length	BCI® 5000 1.7 Series 2" Flange Width								
	9½" BCI® BCI® 5000 1.7			11¾" BCI® 5000 1.7			14" BCI® 5000 1.7		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
Span Length	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									

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (Deflect.) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the Total Load and Deflection columns must be checked. Where a Deflection 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.
- Slope roof joists at least ¼ inch over 12 inches to minimize ponding.
- Table values assume minimum bearing lengths without web stiffeners for joist depths of 16 inches and less. 18 and 20 inch 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.
- 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" per foot or less.  
For steeper slopes, see pages 15-18.

Span Length	BCI® 6000 1.8 Series 2 <sup>5</sup> / <sub>16</sub> " Flange Width											
	9½" BCI® 6000 1.8			11⅛" BCI® 6000 1.8			14" BCI® 6000 1.8			16" BCI® 6000 1.8		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
6	360	392	-	375	408	-	390	424	-	398	432	-
7	309	336	-	322	350	-	334	364	-	341	371	-
8	270	294	-	281	306	-	293	318	-	298	324	-
9	240	261	-	250	272	-	260	283	-	265	288	-
10	216	235	-	225	245	-	234	254	-	238	259	-
11	196	213	-	204	222	-	213	231	-	217	236	-
12	180	196	-	187	204	-	195	212	-	199	216	-
13	166	180	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



## 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  $3\frac{1}{2}$ " per foot or less.  
For steeper slopes, see pages 15-18.

Span Length	BCI® 6500 1.8 Series $2\frac{1}{16}$ " Flange Width											
	9 $\frac{1}{2}$ " BCI® 6500 1.8			11 $\frac{1}{8}$ " BCI® 6500 1.8			14" BCI® 6500 1.8			16" BCI® 6500 1.8		
	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.
Span Length	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												

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (Deflect.) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the Total Load and Deflection columns must be checked. Where a Deflection 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.
- Slope roof joists at least  $\frac{1}{4}$  inch over 12 inches to minimize ponding.
- Table values assume minimum bearing lengths without web stiffeners for joist

- depths of 16 inches and less. 18 and 20 inch 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.
- 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" per foot or less.  
For steeper slopes, see pages 15-18.

Span Length	BCI® 60 2.0 Series 2 <sup>5</sup> / <sub>16</sub> " Flange Width							
	11 <sup>7</sup> / <sub>8</sub> " BCI® 60 2.0			11 <sup>7</sup> / <sub>8</sub> " BCI® 60 2.0			16" BCI® 60 2.0	
	Total Load		Deflect.	Total Load		Deflect.	Total Load	
Span Length	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)
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
27	56	56	42	81	81	62	91	99
28	50	50	38	73	73	56	88	96
29				66	66	50	85	89
30				60	60	46	81	81
31				54	54	41	73	73
32							67	67
33							61	61
34							56	56
35							51	51
								39



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

### 115% and 125% Load Duration

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

Span Length	<b>BCI® 90 2.0 Series</b> <b>3½" Flange Width</b>														
	11⅞" BCI® 90 2.0			14" BCI® 90 2.0			16" BCI® 90 2.0			18" BCI® 90 2.0			20" BCI® 90 2.0		
	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	Total Load	Deflect.	
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

- Total Load values are limited by shear, moment, or deflection equal to L/180.
- Deflection values (Deflect.) are limited by live load deflection equal to L/240. Check the local building code for other deflection limits that may apply.
- Both the Total Load and Deflection columns must be checked. Where a Deflection 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.
- Slope roof joists at least ¼ inch over 12 inches to minimize ponding.
- Table values assume minimum bearing lengths without web stiffeners for joist

- depths of 16 inches and less. 18 and 20 inch 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.
- Allowable spans and loads shall be adjusted and checked for wind load as required by local building code.

# BCI® Design Properties

BCI® Joist Series	Depth [inches]	Weight [plf]	Moment [ft-lbs]	EI x 10 <sup>6</sup> [lb-in <sup>2</sup> ]	K x 10 <sup>6</sup> [lbs]	Shear [lbs]	End Reaction [lbs]				Intermediate Reaction [lbs]			
							1½" Bearing		3½" Bearing		3½" Bearing		5¼" Bearing	
							No WS <sup>(1)</sup>	WS <sup>(2)</sup>	No WS <sup>(1)</sup>	WS <sup>(2)</sup>	No WS <sup>(1)</sup>	WS <sup>(2)</sup>	No WS <sup>(1)</sup>	WS <sup>(2)</sup>
5000 1.7	9½	2.0	2460	160	5.0	1475	950	1125	1125	1275	2100	2350	2525	2750
	11¾	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
	11¾	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
	11¾	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	11¾	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	11¾	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 <sup>(3)</sup>	2300	N/A <sup>(3)</sup>	2550	N/A <sup>(3)</sup>	4150	N/A <sup>(3)</sup>	4750
	20	4.8	16310	2100	11.0	2850	N/A <sup>(3)</sup>	2500	N/A <sup>(3)</sup>	2650	N/A <sup>(3)</sup>	4300	N/A <sup>(3)</sup>	4850

**NOTES:**

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

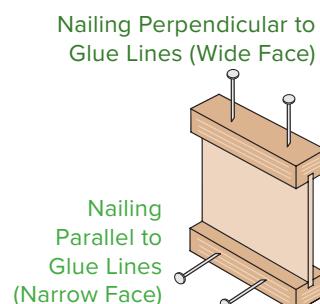
**BUILDING CODE EVALUATION REPORT**

- ICC-ES®/APA® ESR-1336 (IBC®, IRC®)

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

$\Delta$  = deflection [in]  
 $w$  = uniform load [lb/in]  
 $l$  = clear span [in]  
 $EI$  = bending stiffness [lb-in<sup>2</sup>]  
 $K$  = shear deformation coefficient [lb]

## BCI® 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 [inches]	End of Joist [inches]	O.C. Spacing [inches]	End of Joist [inches]
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 & 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

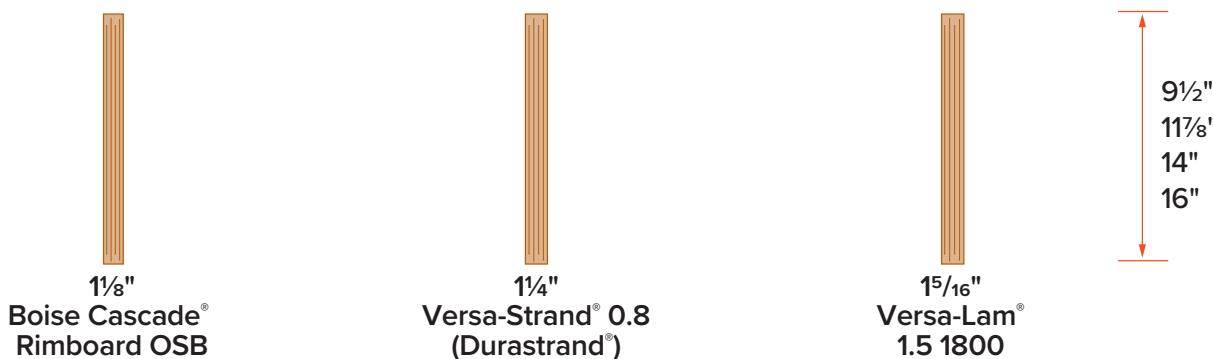
**BCI® Diaphragm Table<sup>(1)</sup>**

BCI® Series	Diaphragm Capacity <sup>(2)(3)</sup> [lb/ft]		
	Unblocked	Blocked	
5000	As permitted for 2x framing in building code	320 lb/ft for 6" o.c. nailing @ panel edges	
		425 lb/ft for 4" o.c. nailing, staggered, @ panel edges	
6000, 6500	As permitted for 3x framing in building code	360 lb/ft for 6" o.c. nailing @ panel edges	
		480 lb/ft for 4" o.c. nailing, staggered @ panel edges	
60, 90	As permitted for 3x framing in building code	As permitted for 3x framing in building code with nail spacing no closer than 3" o.c.	

**NOTES:**

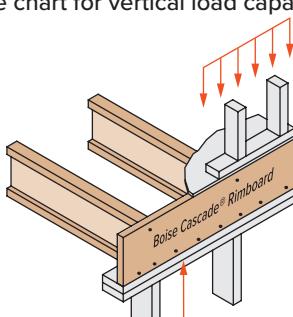
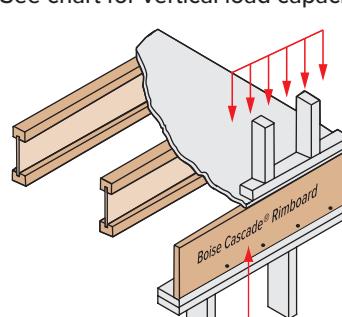
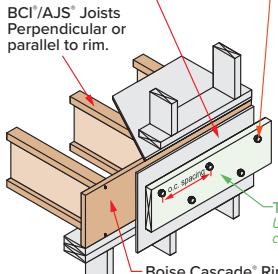
- (1) See table 6 of ICC-ES®/APA® ESR-1336.  
(2) BCI® joists may be substituted for solid sawn framing in horizontal wood diaphragms as shown in Table 2306.3.1 of the IBC® or Table 23-II-H of the UBC.  
(3) Diaphragm nailing shall not exceed BCI® closest allowable nail spacing limits.

## Boise Cascade Rimboard Product Profiles



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

★ Product may not be available. Check with supplier or Boise Cascade representative for availability.

<b>F07</b> <b>Perpendicular</b> See chart for vertical load capacity.  Min. 8d nails at 6" o.c. per IRC. Connection per design professional of record's specification for shear transfer.	<b>F07A</b> <b>Parallel</b> See chart for vertical load capacity.  Min. 8d nails at 6" o.c. per IRC. Connection per design professional of record's specification for shear transfer.	<b>F56</b>  BCI/AJS Joists Perpendicular or parallel to rim. Exterior Wall Sheathing Max. 15/32" thickness. 1/2" dia through bolts (ASTM A307 Grades A&B, SAE J429 Grades 1 or 2, or higher with washers and nuts) or 1/2" dia lag screws (full penetration), staggered. Min. connection for 40/10 psf deck loading: Deck Joist Length Connection 12'-0" & less      2 rows 1/2" bolt or lag screw, 24" o.c. (300 pif max.) 12'-1" — 18'-0"      2 rows 1/2" bolt or lag screw, 16" o.c. (450 pif max.)  <b>Notes:</b> For snow loads greater than 40 psf, and/or dead loads greater than 10 psf, size connection per max pif values shown above.  <b>Treated Ledger -</b> <i>Use only fasteners that are approved for use with corresponding wood treatment.</i> Boise Cascade® Rimboard.
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## Boise Cascade Rimboard Properties

Product	Type	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/in <sup>2</sup> ]	Modulus of Elasticity [lb/in <sup>2</sup> ]	Horizontal Shear [lb/in <sup>2</sup> ]	Compression Perpendicular to Grain [lb/in <sup>2</sup> ]		
		16" Depth & Less	18" & 20" Depth	16" Depth & Less	18" & 20" Depth								
1 1/8" Boise Cascade® Rimboard OSB <sup>(2)</sup>	OSB	4850	3200	3500	3500	200	0.5	Limited span capabilities, see note 2					
1 1/4" Versa-Strand™ 0.8 (Dura-Strand) <sup>(3)</sup>	OSB	5700	3500	5900	5500	240 w/ 8d nails @ 6" o.c. 330 w/ 8d nails @ 4" o.c.	---	1130	800,000	355	1415		
1 5/16" Versa-Lam® LVL 1.5 1800 <sup>(1)</sup>	LVL	6000	5450	4450	4450	Permitted per building code for all nominal 2" thick framing blocked and unblocked diaphragms (4" nail spacing & greater)	0.5	1800	1,400,000	225	525		

Closest Allowable Nail Spacing - Narrow Face [in]	Product			Notes
	1 1/8" Boise Cascade® Rimboard OSB <sup>(2)</sup>	1 1/4" Versa-Strand™ 0.8 (Dura-Strand) <sup>(3)</sup>	1 5/16" Versa-Lam® LVL 1.5 1800 <sup>(1)</sup>	
8d Box (0.113"Ø x 2.5")	3	4	3	1. See ICC-ES®/APA® ESR-1040 for further information.
8d Common (0.131"Ø x 2.5")	3	4	3	2. See Performance Rated Rim Boards, APA® Form No. W345N for further product information.
10d & 12d Box (0.128"Ø x 3", 3.25")		4	3	
16d Box (0.135"Ø x 3.5")		4	3	
10d & 12d Common & 16d Sinker (0.148"Ø x 3", 3.25")		4	4	
16d Common (0.162"Ø x 3.5")		6	6	

## An Introduction to Versa-Lam® LVL Products



When you specify Versa-Lam® laminated veneer headers/beams, you are building quality into your design. They are excellent as floor and roof framing supports or as headers for doors, windows and garage doors and columns.

Because they have no camber, Versa-Lam® LVL products provide flatter, quieter floors, and consequently, the builder can expect happier customers with significantly fewer call backs.

## Versa-Lam® LVL Beam Architectural Specifications

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

**Materials:** Southern Pine or Douglas fir veneers, laminated in a press with 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.

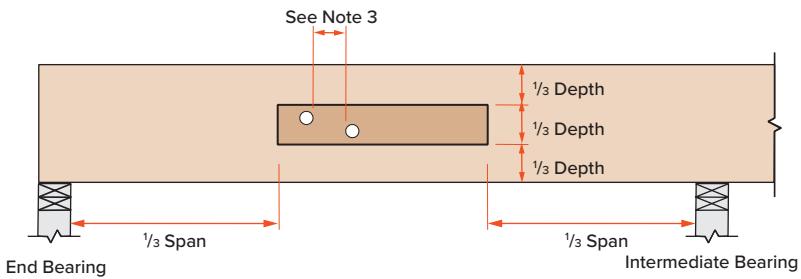
**Fabrication:** Versa-Lam® LVL beams shall be manufactured in a plant evaluated for fabrication by the governing code evaluation service and under the supervision of a third-party inspection agency listed by the corresponding evaluation service.

**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.

## Allowable Holes in Versa-Lam® LVL Beams



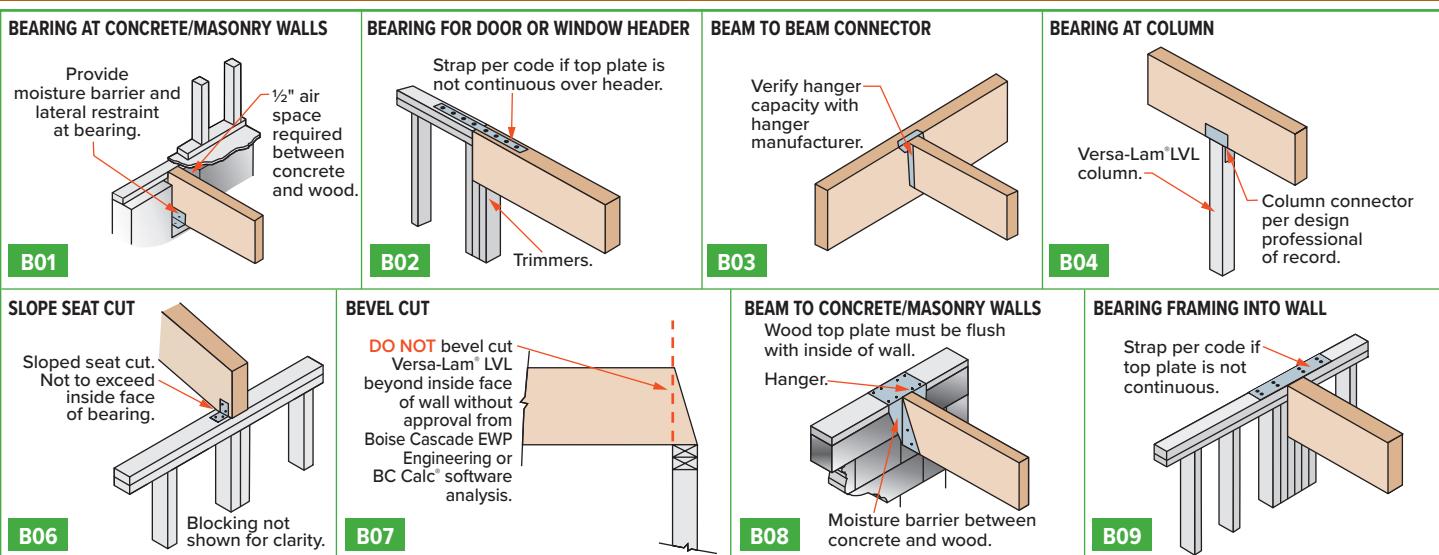
1. Square and rectangular holes are not permitted.
2. Round holes may be drilled or cut with a hole saw anywhere within the shaded area of the beam.
3. The horizontal distance between adjacent holes must be at least two times the size of the larger hole.
4. Do not drill more than three access holes in any four foot long section of beam.

5. The maximum round hole diameter permitted is:

Beam Depth	Max. Hole Diameter
5½"	¾"
7¼"	1"
9¼" and greater	2"

6. 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*.

7. Beams deflect under load. Size holes to provide clearance where required.
8. This hole chart is valid for beams supporting uniform load only. For beams supporting concentrated loads or for beams with larger holes, use BC Calc® sizing software ([www.BCCalc.com](http://www.BCCalc.com)) or contact Boise Cascade EWP Engineering.

**INSTALLATION NOTES**

- Minimum of  $\frac{1}{2}$ " 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 3-5 of this guide.

- Versa-Lam® LVL beams are intended for interior applications only and should be kept as dry as possible during construction.
- Continuous lateral support of top of beam shall be provided (side or top bearing framing).

## Multiple Member Connectors

### Side-Loaded Applications

Number of Members	Maximum Uniform Side Load [plf]							
	Nailed <sup>(3)</sup>		1/2" Dia. Through Bolt <sup>(1)</sup>		5/8" Dia. Through Bolt <sup>(1)</sup>			
2 rows 16d Sinkers @ 12" o.c.	3 rows 16d Sinkers @ 12" o.c.	2 rows @ 24" o.c. staggered	2 rows @ 12" o.c. staggered	2 rows @ 6" o.c. staggered	2 rows @ 24" o.c. staggered	2 rows @ 12" o.c. staggered	2 rows @ 6" o.c. staggered	
1¾" Versa-Lam® LVL (Depths of 18" and less)								
2	470	705	505	1010	2020	560	1120	2245
3 <sup>(2)</sup>	350	525	375	755	1515	420	840	1685
4 <sup>(3)</sup>	use bolt schedule	335	670	1345	370	745	1495	
3½" Versa-Lam® LVL								
2 <sup>(3)</sup>	use bolt schedule	855	1715	N/A	1125	2250	N/A	

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  $\frac{1}{2}$ " bolts and 2½" for  $\frac{5}{8}$ " bolts. Bolt holes shall be the same diameter as the bolt.

2. The nail schedules shown apply to both sides of a 3-member beam.

3. 16d box nails = 0.135" diameter x 3.5" length, 16d sinker nails = 0.148" diameter x 3.25" length.

4. 7" wide beams must be top-loaded or loaded from both sides (lesser side shall be no less than 25% of opposite side).

### Top-Loaded Applications

For top-loaded beams and beams with side loads less than shown in Side-Loaded Applications table above:

Plies	Depth	Nailing <sup>(2)</sup>	Maximum Uniform Load From One Side
(2) 1¾" plies	Depths 11⅞" & less	2 rows 16d box/sinker nails @ 12" o.c.	400 plf
	Depths 14" - 18"	3 rows 16d box/sinker nails @ 12" o.c.	600 plf
	Depth = 24"	4 rows 16d box/sinker nails @ 12" o.c.	800 plf
(3) 1¾" plies <sup>(1)</sup>	Depths 11⅞" & less	2 rows 16d box/sinker nails @ 12" o.c.	300 plf
	Depths 14" - 18"	3 rows 16d box/sinker nails @ 12" o.c.	450 plf
	Depth = 24"	4 rows 16d box/sinker nails @ 12" o.c.	600 plf
(4) 1¼" plies	Depths 18" & less	2 rows $\frac{1}{2}$ " bolts @ 24" o.c., staggered	335 plf
	Depth = 24"	3 rows $\frac{1}{2}$ " bolts @ 24" o.c., staggered every 8"	505 plf
(2) 3½" plies	Depths 18" & less	2 rows $\frac{1}{2}$ " bolts @ 24" o.c., staggered	855 plf
	Depth 20" - 24"	3 rows $\frac{1}{2}$ " bolts @ 24" o.c., staggered every 8"	1285 plf

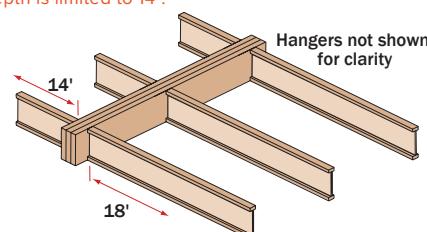
- The nail schedules shown apply to both sides of a 3-member beam.
- 16d box nails = 0.135" diameter x 3.5" length, 16d sinker nails = 0.148" diameter x 3.25" length.
- Beams wider than 7" must be designed by the engineer of record.

- 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®.
- Connection values are based upon the NDS, 2018 Edition.
- FastenMaster TrussLOK®, Simpson Strong-Tie SDW or SDS, and USP WS screws may also be used to connect multiple member Versa-Lam® LVL beams, contact Boise Cascade EWP Engineering for further information.

### Designing Connections For Multiple Versa-Lam® LVL Members

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 is an example of how to size and connect a multiple-ply Versa-Lam® LVL floor beam.

Given: Beam shown below is supporting residential floor load (40 psf live load, 10 psf dead load) and is spanning 16'-0". Beam depth is limited to 14".



Find: A multiple 1¾" ply Versa-Lam® LVL that is adequate to support the design loads and the member's proper connection schedule.

- Calculate the tributary width that beam is supporting:  
 $14' / 2 + 18' / 2 = 16'$
- Use PLF tables on pages 3-5 of this guide or BC Calc® to size beam. A Triple Versa-Lam® LVL 2.1 2800 1¾" x 14" is found to adequately support the design loads
- Calculate the maximum plf load from one side (the right side in this case).  
 $\text{Max. Side Load} = (18' / 2) \times (40 + 10 \text{ psf}) = 450 \text{ plf}$
- Go to the [Multiple Member Connection Table, Side-Loaded Applications, 1¾" Versa-Lam® LVL, 3 members](#).
- The proper connection schedule must have a capacity greater than the max. side load:

Nailed: 3 rows 16d sinkers @ 12" o.c.:

525 plf is greater than 450 plf OK

Bolts:  $\frac{1}{2}$ " diameter 2 rows @ 12" staggered:

755 plf is greater than 450 plf OK

# Versa-Lam® LVL Floor Load Tables

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

**KEY TO TABLE:**

**Top Figure**  
**Middle Figure**  
**Bottom Figure**

- Allowable Total Load [plf]
- Allowable Live Load [plf]
- Minimum Required Bearing Length at End / Intermediate Supports [inches]

SPAN (ft)	1 1/4" Versa-Lam® 2.1E 2800					3 1/2" Versa-Lam® 2.1E 3100					5 1/4" Versa-Lam® 2.1E 3100					7" Versa-Lam® 2.1E 3100								
	7/4"	9 1/2"	11 1/8"	14"	16" (I)	18" (I)	7/4"	9 1/2"	11 1/8"	14"	16"	18"	9 1/2"	11 1/8"	14"	16"	18"	20"	11 1/8"	14"	16"	18"	20"	24"
6	763	1063	1425	1796	2194	2398	1526	2127	2850	3591	4388	4796	3190	4275	5387	6583	7194	7192	5700	7183	8777	9593	9589	9582
	693	-	-	-	-	1385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18/4.4	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	3.8/8.2	4.1/10.3	5/12.6	5.5/13.8	5.5/13.8	5.5/13.8
7	614	877	1161	1445	1742	2054	1272	1754	2322	2889	3484	4109	2632	3483	4334	5226	6163	6161	4644	5778	6967	8218	8214	8207
	452	-	-	-	-	905	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16/4.1	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	1208	1444	1702	925	1493	1958	2416	2887	3404	2239	2938	3624	4331	5106	5387	3917	4832	5775	6808	7183	7176
	310	660	-	-	-	-	621	1321	-	-	-	-	1981	-	-	-	-	-	-	-	-	-	-	-
	15/3.5	2.3/5.7	3/7.5	3.7/9.3	4.4/11.1	5.2/13	15/3.5	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	1038	1232	1443	659	1299	1693	2076	2465	2886	1948	2539	3113	3697	4328	4786	3386	4151	4930	5771	6381	6374
	222	477	-	-	-	-	444	954	-	-	-	-	1431	-	-	-	-	-	-	-	-	-	-	-
	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	1075	1252	485	1056	1491	1819	2150	2504	1584	2236	2728	3225	3756	4304	2981	3638	4299	5008	5739	5732
	164	355	660	-	-	-	327	710	1321	-	-	-	1065	1981	-	-	-	-	2642	-	-	-	-	-
	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	1105	366	804	1331	1618	1906	2211	1205	1997	2428	2858	3316	3803	2662	3237	3811	4422	5071	5207
	124	271	508	798	-	-	248	541	1015	1595	-	-	812	1523	2393	-	-	-	2031	3190	-	-	-	-
	15/3	17/4.3	27/6.7	34/8.5	4/10.1	47/11.7	1.5/3	17/4.3	23/7	3.4/8.5	4/10.1	47/11.7	1.7/4.3	2.8/7	3.4/8.5	4/10.1	47/11.7	5.4/13.4	2.8/7	3.4/8.5	4/10.1	47/11.7	5.4/13.4	5.5/13.8
12	141	312	528	722	856	989	282	624	1171	1457	1711	1979	937	1757	2186	2567	2968	3393	3243	2915	3422	3958	4524	4769
	96	211	398	629	-	-	193	422	796	1258	-	-	633	1194	1887	-	-	-	1592	2517	-	-	-	-
	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	1325	1552	1791	741	1413	1988	2328	2686	3062	1884	2651	3104	3581	4083	4399
	76	168	318	504	728	-	152	335	635	1009	1456	-	503	953	1513	2185	-	-	1270	2017	2913	-	-	-
	1.5/3	1.5/31	2.3/5.6	31/77	3.9/9.7	4.5/11.2	1.5/3	1.5/31	2.4/5.9	3.3/8.3	3.9/9.7	4.5/11.2	1.5/3	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	1172	1420	1635	595	1141	1759	2130	2452	2789	1522	2345	2840	3270	3719	4082
	61	135	257	410	594	-	123	270	514	820	1189	-	405	771	1230	1783	-	-	1029	1640	2378	-	-	-
	1.5/3	1.5/3	21/51	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	1000	1309	1504	485	934	1500	1963	2256	2561	1245	2000	2617	3008	3415	3807
	50	111	211	338	491	680	100	221	422	675	982	1359	332	633	1013	1473	2039	-	844	1350	1964	2718	-	-
	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	1153	1392	399	772	1246	1730	2088	2367	1030	1661	2306	2784	3156	3566
	41	92	175	281	410	569	83	183	350	562	820	1138	275	526	843	1230	1707	2279	701	1124	1640	2277	3038	-
	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	694	1020	1276	332	645	1044	1530	1914	2200	2657	3008	3404	2040	2552	2933	3354
	77	147	236	346	481	69	153	294	473	691	962	1230	230	441	709	1037	1443	1931	258	945	1382	1924	2575	-
	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	1136	279	544	884	1301	1704	2055	726	1178	1735	2273	2740	3165	
	65	124	201	294	410	58	130	249	401	588	820	194	373	602	882	1230	1650	498	802	1176	1640	2200	-	
	1.5/3	1.5/3.2	21/5.2	2.9/7.1	3.6/8.9	1.5/3	1.5/3	1.5/3.2	21/5.2	3/7.6	4/9.9	1.5/3	1.5/3.2	21/5.2	3/7.6	4/9.9	4.8/11.9	1.5/3.2	21/5.2	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	1018	236	462	753	1112	1527	1866	617	1004	1483	2036	2488	2996	
	55	106	172	252	352	50	110	213	343	504	704	166	319	515	756	1056	1420	425	686	1008	1408	1893	-	
	1.5/3	1.5/3	1.9/4.7	2.7/6.8	3.4/8.5	1.5/3	1.5/3	1.9/4.7	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	1346	1682	528	862	1276	1794	2242	2844	
	47	92	148	217	304	43	95	183	296															

# Versa-Lam® LVL Roof Load Tables

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## KEY TO TABLE:

**Top Figure**  
**Middle Figure**  
**Bottom Figure**

- Allowable Total Load [plf]  
- Allowable Live Load [plf]  
- Minimum Required Bearing Length at End / Intermediate Supports [inches]

## Versa-Lam® LVL 2.1E 2800 & 2.1E 3100 (115% Load Duration)

SPAN (ft)	1¾" Versa-Lam® 2.1E 2800						3½" Versa-Lam® 2.1E 3100						5¼" Versa-Lam® 2.1E 3100						7" Versa-Lam® 2.1E 3100					
	7¼"	9½"	11¾"	14"	16" (1)	18" (1)	7¼"	9½"	11¾"	14"	16"	18"	9½"	11¾"	14"	16"	18"	20"	11¾"	14"	16"	18"	20"	24"
6	878	1224	1640	2066	2399	2398	1756	2447	3279	4132	4798	4796	3671	4919	6198	7197	7194	7192	6558	8264	9596	9593	9589	9582
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	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	1009	1336	1662	2004	2054	1464	2019	2672	3325	4008	4109	3028	4008	4987	6013	6163	6161	5344	6649	8017	8218	8214	8207
	678	-	-	-	-	-	1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	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	1127	1390	1661	1797	1198	1718	2254	2780	3323	3593	2577	3381	4171	4984	5390	5387	4508	5561	6645	7186	7176	7176
	466	-	-	-	-	-	931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17/41	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	1194	1418	1596	881	1495	1948	2389	2837	3192	2242	2923	3583	4255	4788	4786	3897	4778	5673	6384	6381	6374
	333	-	-	-	-	-	665	1431	-	-	-	-	2146	-	-	-	-	-	-	-	-	-	-	-
	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	1047	1237	1436	648	1276	1716	2094	2474	2871	1913	2574	3140	3711	4307	4304	3431	4187	4949	5743	5739	5732
	246	532	-	-	-	-	491	1065	-	-	-	-	1597	-	-	-	-	-	-	-	-	-	-	-
	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	1097	1272	490	1053	1532	1863	2194	2545	1579	2299	2795	3290	3817	3911	3065	3726	4387	5090	5214	5207
	186	406	-	-	-	-	372	812	1523	-	-	-	1218	2285	-	-	-	-	3046	-	-	-	-	-
	15/3	2/5	31/77	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	1139	379	835	1349	1678	1970	2278	1253	2023	2517	2955	3417	3582	2697	3356	3940	4556	4777	4769
	144	317	597	-	-	-	289	633	1194	-	-	-	950	1791	-	-	-	-	2389	-	-	-	-	-
	15/3	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	31/7.8	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	1031	298	662	1147	1526	1787	2062	992	1721	2289	2681	3092	3305	2295	3052	3574	4123	4406	4399
	114	251	476	-	-	-	229	503	953	1513	-	-	754	1429	2269	-	-	-	1905	3026	-	-	-	-
	15/3	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	1350	1635	1883	798	1482	2025	2453	2824	3067	1976	2701	3271	3765	4089	4082
	92	203	386	-	-	-	184	405	771	1230	-	-	608	1157	1845	-	-	-	1543	2460	-	-	-	-
	15/3	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	1175	1507	1732	650	1250	1762	2261	2598	2861	1667	2349	3014	3464	3814	3807
	75	166	317	506	-	-	150	332	633	1013	1473	-	497	950	1519	2210	-	-	1266	2025	2946	-	-	-
	15/3	1.5/3.2	2.2/5.6	31/77	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	1031	1328	1603	536	1035	1546	1993	2405	2680	1380	2062	2657	3207	3573	3566
	62	137	263	421	-	-	124	275	526	843	1230	-	412	788	1264	1845	-	-	1051	1686	2460	-	-	-
	15/3	1.5/3.3	2.1/5.3	2.9/7.2	3.7/9.2	4.6/11.5	1.5/3	1.5/3.3	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	1175	1470	447	866	1368	1763	2204	2521	1155	1823	2350	2939	3361	3354
	52	115	220	354	518	-	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	15/3	15/3	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	1047	1309	376	731	1184	1570	1964	2367	975	1579	2093	2618	3156	3165
	44	97	187	301	441	-	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	15/3	15/3	17/4.3	2.6/6.4	3.3/8.2	4.1/10.3	1.5/3	1.5/3	17/4.3	2.8/6.9	3.6/9.1	4.5/11.4	1.5/3	17/4.3	2.8/6.9	3.6/9.1	4.5/11.4	5.5/13.7	17/4.3	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	1173	319	622	1011	1407	1760	2150	829	1347	1876	2347	2867	2996
	37	83	160	257	378	528	74	166	319	515	756	1056	249	479	772	1133	1584	2130	638	1029	1511	2112	2839	-
	1.5/3	1.5/3	1.5/3.8	2.4/6	31/77	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	1057	1272	533	868	1267	1586	1938	2115	549	887	1305	1827	2460	-
	71	137	222	326	457	64	142</																	

# Versa-Lam® LVL Roof Load Tables

Versa-Lam® LVL 2.1E 2800 & 2.1E 3100

(125% Load Duration)

**KEY TO TABLE:**

**Top Figure**  
**Middle Figure**  
**Bottom Figure**

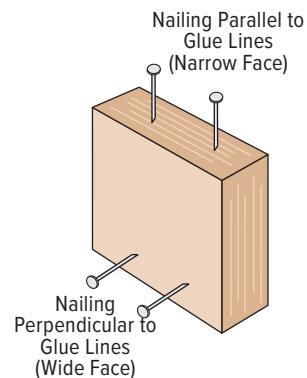
- Allowable Total Load [plf]
- Allowable Live Load [plf]
- Minimum Required Bearing Length at End / Intermediate Supports [inches]

SPAN (ft)	1 1/4" Versa-Lam® 2.1E 2800								3 1/2" Versa-Lam® 2.1E 3100								5 1/4" Versa-Lam® 2.1E 3100								7" Versa-Lam® 2.1E 3100							
	7/4"	9 1/2"	11 1/8"	14"	16" (I)	18" (I)	7/4"	9 1/2"	11 1/8"	14"	16"	18"	9 1/2"	11 1/8"	14"	16"	18"	20"	11 1/8"	14"	16"	18"	20"	24"								
6	955	1330	1783	2246	2399	2398	1909	2661	3565	4492	4798	4796	3991	5348	6738	7197	7194	7192	7131	8984	9596	9593	9589	9582								
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
7	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	3.1 / 7.6	4.1 / 10.2	5.1 / 12.9	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	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8						
	769	1098	1453	1807	2055	2054	1592	2195	2905	3615	4111	4109	3293	4358	5422	6166	6163	6161	5810	7229	8221	8218	8214	8207								
8	678	-	-	-	-	-	1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
	21 / 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	2.9 / 7.3	3.9 / 9.7	4.8 / 12.1	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	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8						
9	588	934	1225	1512	1797	1797	1235	1868	2451	3023	3595	3593	2802	3676	4535	5392	5390	5387	4901	6047	7190	7186	7183	7176								
	466	-	-	-	-	-	931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-							
10	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	2.9 / 7.1	3.8 / 9.4	4.6 / 11.6	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	5.5 / 13.8	5.5 / 13.8							
	440	774	1059	1299	1542	1596	881	1625	2119	2598	3085	3192	2438	3178	3897	4627	4788	4786	4238	5195	6169	6384	6381	6374								
11	333	715	-	-	-	-	665	1431	-	-	-	-	2146	-	-	-	-	-	-	-	-	-	-	-	-							
	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	2.8 / 7	3.7 / 9.1	4.5 / 11.2	5.3 / 13.3	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	5.5 / 13.8	5.5 / 13.8							
12	324	626	933	1138	1345	1436	648	1387	1866	2277	2691	2871	2081	2799	3415	4036	4307	4304	3732	4554	5381	5743	5739	5732								
	246	532	-	-	-	-	491	1065	-	-	-	-	1597	-	-	-	-	-	-	-	-	-	-	-	-							
13	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	2.7 / 6.6	3.6 / 8.9	4.4 / 10.9	5.2 / 12.9	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	5.5 / 13.8	5.5 / 13.8							
	189	418	662	904	1071	1195	379	835	1467	1825	2142	2390	1253	2200	2737	3214	3585	3582	2934	3650	4285	4780	4777	4769								
14	144	317	597	-	-	-	289	633	1194	-	-	-	950	1791	-	-	-	-	2389	-	-	-	-	-	-	-						
	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	1.9 / 4.8	3.4 / 8.4	4.2 / 10.5	4.9 / 12.3	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	5.5 / 13.8	5.5 / 13.8							
15	149	331	563	770	972	1102	298	662	1248	1660	1944	2205	992	1872	2490	2916	3307	3305	2496	3320	3888	4410	4406	4399								
	114	251	476	756	-	-	229	503	953	1513	-	-	754	1429	2269	-	-	1905	3026	-	-	-	-	-	-	-						
16	1.5 / 3	17 / 41	2.8 / 7	3.8 / 9.6	4.8 / 12.1	5.5 / 13.8	1.5 / 3	17 / 41	31 / 7.8	41 / 10.4	4.8 / 12.1	5.5 / 13.8	17 / 41	31 / 7.8	41 / 10.4	4.8 / 12.1	5.5 / 13.8	3.1 / 7.8	41 / 10.4	4.8 / 12.1	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8							
	119	266	485	663	854	1023	239	532	1018	1469	1779	2046	798	1527	2203	2668	3069	3067	2036	2938	3558	4093	4089	4082								
17	92	203	386	615	-	-	184	405	771	1230	-	-	608	1157	1845	-	-	1543	2460	-	-	-	-	-	-	-						
	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	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	5.5 / 13.8							
18	97	217	417	576	743	929	193	434	833	1278	1639	1884	650	1250	1917	2459	2826	2861	1667	2556	3279	3768	3814	3807								
	75	166	317	506	737	-	150	332	633	1013	1473	-	497	950	1519	2210	-	-	1266	2025	2946	-	-	-	-	-						
19	15 / 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	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	5.5 / 13.8							
	67	179	345	506	652	815	159	358	690	1111	1445	1744	536	1035	1667	2168	2616	2680	1380	2223	2890	3488	3573	3566								
20	62	137	263	421	615	-	124	275	526	843	1230	1707	412	788	1264	1845	2561	-	1051	1688	2460	3415	-	-	-							
	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	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	5.5 / 13.8								
21	66	149	289	447	577	721	132	298	577	933	1278	1599	447	866	1399	1918	2398	2521	1155	1865	2557	3198	3361	3354								
	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	31 / 7.7	4.2 / 10.5	5.2 / 13.1	1.5 / 3	1.9 / 4.8	31 / 7.7	4.2 / 10.5	5.2 / 13.1	5.5 / 13.8	1.9 / 4.8	31 / 7.7	4.2 / 10.5	5.2 / 13.1	5.5 / 13.8	5.5 / 13.8								
22	51	102	168	249	353	43	102	204	335	499	706	153	305	503	748	1059	1440	407	670	998	1412	1920	2363									
	1.5 / 3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.6 / 9.1	1.5 / 3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.9 / 9.7	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	5.5 / 13.8									
23	54	104	168	248	348	48	107	208	336	496	696	161	311	504	743	1044	1410	415	672	991	1392	1880	-	-	-							
	1.5 / 3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.6 / 9.1	1.5 / 3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.9 / 9.7	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	5.5 / 13.8									
24	51	102	168	249	353	43	102	204	335	499	706	153	305	503	748	1059	1440	407	670	998	1412	1920	2363									
	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	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	5.5 / 13.8									
25	39	79	131	196	278	79	158	262	392	557	118	238	393	588	835	1139	317	524	784	1113	1518	2178	-	-	-							
	33	63	103	152	215	-	65	127	206	305																						

## Closest Allowable Nail Spacing

Versa-Lam® LVL Products		Nailing Parallel to Glue Lines (Narrow Face) <sup>(1)</sup>						Nailing Perpendicular to Glue Lines (Wide Face)	
Nail Size		Versa-Lam® LVL 1.5E 1800 1 <sup>5</sup> / <sub>16</sub> "		Versa-Lam® LVL 1 <sup>3</sup> / <sub>4</sub> "		Versa-Lam® LVL 3 <sup>1</sup> / <sub>2</sub> " & Wider		All Products	
O.C. [in]	End [in]	O.C. [in]	End [in]	O.C. [in]	End [in]	O.C. [in]	End [in]	O.C. [in]	End [in]
8d Box	(0.113"ø x 2.5")	3	1 <sup>1</sup> / <sub>2</sub>	2	1	2	1 <sup>1</sup> / <sub>2</sub>	2	1 <sup>1</sup> / <sub>2</sub>
8d Common	(0.131"ø x 2.5")	3	2	3	2	2	1	2	1
10d & 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	1
10d & 12d Common & 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	2	2

- 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 Versa-Lam® LVL/Versa-Rim® LVL. Use nails as specified by Simpson Strong-Tie.



1) For 1<sup>3</sup>/<sub>4</sub>" thickness and greater, 2 rows of nails (such as for a metal strap) are allowed (use 1<sup>1</sup>/<sub>2</sub>" minimum offset between rows and stagger nails).

## Versa-Lam® LVL Design Values

Grade	Width [in]	Depth [in]	Weight [lb/ft]	Allowable Shear [lb]	Allowable Moment [ft-lb]	Moment of Inertia [in <sup>4</sup> ]	Grade	Width [in]	Depth [in]	Weight [lb/ft]	Allowable Shear [lb]	Allowable Moment [ft-lb]	Moment of Inertia [in <sup>4</sup> ]
Versa-Lam® 1.5E 1800	1 <sup>5</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>2</sub>	3.2	1,870	3,039	93.8	Versa-Lam® 2.1E 3100	5 <sup>1</sup> / <sub>2</sub>	4.9	3,658	4,971	48.5	
		11 <sup>7</sup> / <sub>8</sub>	4.0	2,338	4,632	183.2		7 <sup>1</sup> / <sub>4</sub>	6.5	4,821	8,377	111.1	
		14	4.7	2,756	6,322	300.1		9 <sup>1</sup> / <sub>4</sub>	8.3	6,151	13,272	230.8	
		16	5.4	3,150	8,136	448.0		9 <sup>1</sup> / <sub>2</sub>	8.5	6,318	13,958	250.1	
		18	6.1	3,544	10,163	637.9		11 <sup>1</sup> / <sub>4</sub>	10.1	7,481	19,210	415.3	
		20	6.7	3,938	12,401	875.0		11 <sup>7</sup> / <sub>8</sub>	10.7	7,897	21,275	488.4	
Versa-Lam® 1.8E 2400	1 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	1.3	998	702	5.4	Versa-Lam® 2.1E 3100	14	12.6	9,310	29,035	800.3	
		5 <sup>1</sup> / <sub>2</sub>	2.1	1,568	1,649	20.8		16	14.4	10,640	37,364	1194.7	
		7 <sup>1</sup> / <sub>4</sub>	2.8	2,066	2,779	47.6		18	16.2	11,970	46,674	1701.0	
		9 <sup>1</sup> / <sub>4</sub>	3.6	2,636	4,404	98.9		20	18.0	13,300	56,952	2333.3	
		9 <sup>1</sup> / <sub>2</sub>	3.7	2,708	4,631	107.2		5 <sup>1</sup> / <sub>4</sub>	7.1	5,237	6,830	63.3	
		11 <sup>1</sup> / <sub>4</sub>	4.3	3,206	6,374	178.0		5 <sup>1</sup> / <sub>2</sub>	7.4	5,486	7,457	72.8	
		11 <sup>7</sup> / <sub>8</sub>	4.6	3,384	7,059	209.3		7 <sup>1</sup> / <sub>4</sub>	9.8	7,232	12,566	166.7	
		14	5.4	3,990	9,634	343.0		9 <sup>1</sup> / <sub>2</sub>	12.5	9,227	19,908	346.3	
		16	6.2	4,560	12,397	512.0		11 <sup>1</sup> / <sub>4</sub>	15.2	11,222	28,814	622.9	
Versa-Lam® 2.1E 2800	1 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	2.5	1,829	2,245	24.3	Versa-Lam® 2.1E 3100	11 <sup>7</sup> / <sub>8</sub>	16.0	11,845	31,913	732.6	
		7 <sup>1</sup> / <sub>4</sub>	3.3	2,411	3,783	55.6		14	18.9	13,965	43,552	1200.5	
		9 <sup>1</sup> / <sub>4</sub>	4.2	3,076	5,994	115.4		16	21.6	15,960	56,046	1792.0	
		9 <sup>1</sup> / <sub>2</sub>	4.3	3,159	6,304	125.0		18	24.3	17,955	70,011	2551.5	
		11 <sup>1</sup> / <sub>4</sub>	5.1	3,741	8,675	207.6		20	27.0	19,950	85,428	3500.0	
		11 <sup>7</sup> / <sub>8</sub>	5.3	3,948	9,608	244.2		24	32.4	23,940	120,549	6048.0	
		14	6.3	4,655	13,112	400.2		9 <sup>1</sup> / <sub>4</sub>	16.6	12,303	26,544	461.7	
		16	7.2	5,320	16,874	597.3		9 <sup>1</sup> / <sub>2</sub>	17.1	12,635	27,916	500.1	
		18	8.1	5,985	21,079	850.5		11 <sup>1</sup> / <sub>4</sub>	20.2	14,963	38,419	830.6	
								11 <sup>7</sup> / <sub>8</sub>	21.4	15,794	42,550	976.8	

## Versa-Lam® LVL Allowable Stress Values

Design Property	Grade	Modulus of Elasticity True (Shear-Free)		Modulus of Elasticity Apparent		Modulus of Elasticity for Stability		Bending	Horizontal Shear	Tension Parallel to Grain	Compression Parallel to Grain	Compression Perpendicular to Grain	Equivalent Specific Gravity for Fastener Design
		E (x 10 <sup>6</sup> psi) <sup>(1)(7)</sup>	E (x 10 <sup>6</sup> psi) <sup>(1)</sup>	E <sub>min</sub> (x 10 <sup>6</sup> psi) <sup>(1)(8)</sup>	F <sub>b</sub> (psi) <sup>(2)(3)</sup>	F <sub>v</sub> (psi) <sup>(2)(4)</sup>	F <sub>t</sub> (psi) <sup>(2)(5)</sup>						
Versa-Lam® LVL Beams 1 <sup>3</sup> / <sub>4</sub> "	2.1 E 2800	2.1	2.0	1.1	2800	285	1950	3000		750		0.5	
Versa-Lam® LVL Beams 3 <sup>1</sup> / <sub>2</sub> " & Wider	2.1 E 3100	2.1	2.0	1.1	3100	285	1950	3000		750		0.5	
Versa-Lam® LVL Studs	1.8E 2400	1.8	1.7	0.9	2650	285	1500	3000		750		0.5	
Versa-Lam® LVL Columns	1.8E 2650	1.8	1.7	0.9	2650	285	1650	3000		750		0.5	

- This value cannot be adjusted for load duration.
- This value is based upon a load duration of 100% and may be adjusted for other load durations.
- Fiber stress bending value shall be multiplied by the depth factor, (12/d)<sup>1/3</sup> where d = member depth [in].
- Stress applied perpendicular to the gluelines.
- Tension value shall be multiplied by a length factor, (4/L)<sup>1/3</sup> where L = member length [ft]. Use L = 4 for members less than four feet long.
- Stress applied parallel to the gluelines.

- True or shear-free modulus of elasticity does not account for shear deformation.
- E<sub>min</sub> is the reference modulus of elasticity for beam and column stability calculations. It is calculated using E<sub>apparent</sub> in accordance with Appendix D of the 2018 NDS. When calculating E<sub>min</sub>, the coefficient of modulus of elasticity, COV<sub>E</sub>, 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 1.8 2650 Columns

Column Length [ft]	3½" Allowable Axial Load (lb)											
	3½" x 3½"			3½" x 5¼"			3½" x 7"					
	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			
5	12,270	13,150	13,660	18,425	19,740	20,515	24,580	26,330	27,365			
6	10,080	10,650	10,980	15,140	15,995	16,495	20,195	21,335	22,000			
7	8,310	8,705	8,930	12,480	13,075	13,415	16,650	17,435	17,890			
8	6,930	7,205	7,370	10,405	10,825	11,070	13,880	14,440	14,760			
9	5,840	6,050	6,160	8,770	9,080	9,260	11,700	12,115	12,350			
10	4,980	5,135	5,225	7,480	7,715	7,850	9,975	10,290	10,470			
11	4,290	4,410	4,480	6,445	6,625	6,730	8,595	8,835	8,975			
12	3,730	3,825	3,880	5,600	5,745	5,830	7,475	7,665	7,775			
13	3,270	3,350	3,390	4,915	5,030	5,095	6,555	6,710	6,795			
14	2,890	2,950	2,990	4,340	4,435	4,490	5,790	5,915	5,990			
Column Length [ft]	5¼" Allowable Axial Load (lb)											
	5¼" x 5¼"			5¼" x 5½"			5¼" x 7"			5¼" x 7¼"		
	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
15	11,210	11,560	11,760	11,740	12,110	12,320	14,960	15,425	15,695	15,490	15,980	16,260
16	10,135	10,430	10,600	10,620	10,930	11,110	13,525	13,920	14,150	14,010	14,420	14,650
17	9,205	9,455	9,600	9,650	9,910	10,060	12,285	12,620	12,810	12,730	13,070	13,270
18	8,395	8,610	8,735	8,800	9,020	9,150	11,205	11,495	11,655	11,610	11,900	12,070
19	7,685	7,870	7,975	8,050	8,250	8,360	10,260	10,505	10,645	10,620	10,880	11,030
20	7,060	7,220	7,310	7,400	7,560	7,660	9,420	9,635	9,760	9,760	9,980	10,110
21	6,505	6,645	6,725	6,820	6,960	7,050	8,680	8,870	8,980	8,990	9,190	9,300
22											17,165	17,650
23											15,990	16,420
24											14,930	15,310

- Table assumes that the column is braced at column ends only. Effective column length is equal to actual column length.
- Allowable loads are based upon one-piece (solid) column members used in dry service conditions. BC Calc® sizing software ([www.BCCalc.com](http://www.BCCalc.com)) may be used for multi-piece column design.
- Allowable loads are based on an eccentricity value equal to 0.167 multiplied by either the column thickness or width (worst case).
- Allowable loads are based on 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® sizing software ([www.BCCalc.com](http://www.BCCalc.com)) may be used for out of plane lateral load column application design.

# Versa-Stud® LVL 1.8E 2400

## 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]
<b>Versa-Stud® 1.8E 2400 1½" x 5½"</b>	<b>2617</b>	<b>3000</b>	<b>450</b>	<b>1,700,000</b>	<b>285</b>
Douglas-Fir # 2 Grade 2 x 6	1170	1350	625	1,600,000	180
Spruce Pine Fir (North) # 1 / 2 Grade 2 x 6	1138	1150	425	1,400,000	135
Hem-Fir # 2 Grade 2 x 6	1105	1300	405	1,300,000	150
Western Woods # 2 Grade 2 x 6	878	900	335	1,000,000	135

- Design values are for loads applied to the narrow face of the studs.
- Dimension lumber values taken from 2018 NDS Supplement: Design Values for Wood Construction (per 2018 IBC®/IRC®).

For further design information, please see Versa-Stud 1.8E 2400 Western Tall Wall Guide.

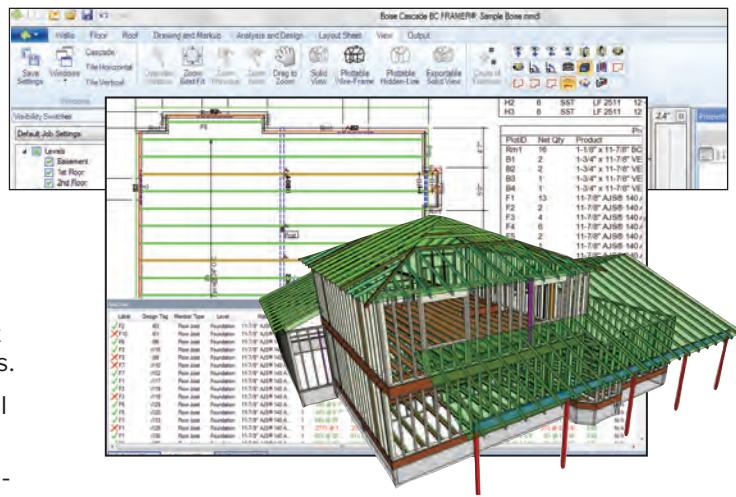
# Computer Software



BC Framer® helps customers create floor and roof framing layouts quickly. This easy-to-use computer-aided 3D drafting program frames layouts and creates piece and price reports. It also draws framing drawings that use Boise Cascade's engineered wood products (EWP) and develops schedules. BC Framer's editing and drawing tools allow flexibility when modifying framing layouts. You can also customize the layout drawing with framing details, notes, symbols, and accessories.

Information can also be obtained at 1-800-405-5969 or email us at [EWPSupport@BC.com](mailto:EWPSupport@BC.com).

**Technical Specs:** This program is designed to work on stand-alone computers.



## RECOMMENDED HARDWARE

- CPU: 2.8GHz 6th Gen+ Core i7 or Xeon v4+
- L2 Cache: 3MB/Core
- RAM: 16GB
- Video: Full support for DirectX 9; Single monitor 512MB; Dual monitor 1GB (Resolution 1366×768 Minimum)
- Free Storage: 80GB (average 6,000-8,000 jobs)
- Operating Systems: Windows 10 (Pro or Enterprise Edition 64-bit)\*, Windows 8.1 (Professional Edition 64-bit), Windows 7 (Professional Edition 64-bit),

\*Apple Mac or Windows Emulator not supported

Actual specifications vary by user and will be assessed prior to installation.

## BC Calc® Sizing Software

BC Calc® is now a web-based application available at [www.bccalc.com](http://www.bccalc.com) and can be used on Windows or Apple operating systems via Internet Explorer, Edge, Chrome or Safari browsers as well as on iOS and Android tablets. An offline version is available to BC Connect® or registered BC Calc® users for use without an internet connection or in cases of limited connection availability. It can be downloaded once users have signed in to the application.

In addition to BCI® & AJS® Joists, Versa-Lam® LVL, and BOISE GLULAM®, BC Calc® also offers the analysis of solid sawn lumber and timber members. Thus BC Calc® is the only program needed to analyze structural wood members.

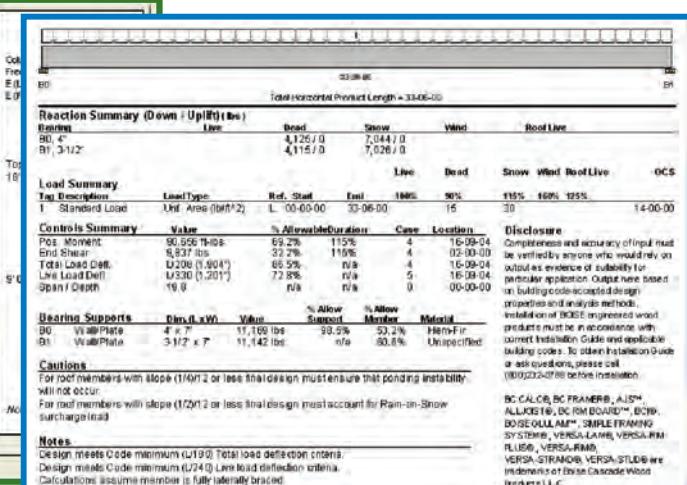
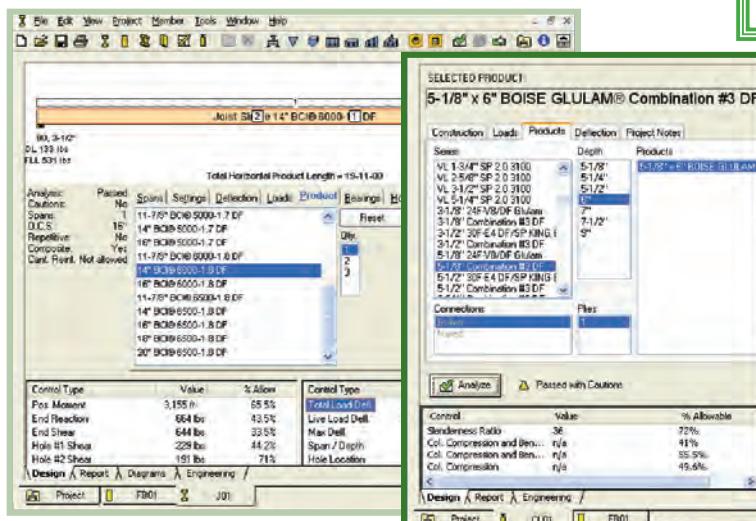


Boise Cascade has provided BC Calc® free of charge to the design community since 1994.

## COMPUTER REQUIREMENTS

PC with any current version of MS Windows®, along with an internet connection. For questions regarding BC Calc®, call 1-800-405-5969 or email [EWPSupport@BC.com](mailto:EWPSupport@BC.com).

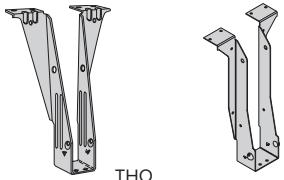
To Download BC CALC US, [www.bccalc.com](http://www.bccalc.com)



# Framing Connectors - Simpson Strong-Tie

Single Joist - Top Flange					Single Joist - Face Mount					Face Mount Skewed 45° Joist Hanger					
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header Joist					Header Joist					Header Joist	
9 1/2"	5000.17	ITS2.06/9.5	993	6-10d 2-10dx1 1/2"	9 1/2"	5000.17	IUS2.06/9.5	935	8-10d -	9 1/2"	5000.17	SUR/L2.06/9	1251	14-16d 6-10dx1 1/2"	
	6000.18	ITS2.37/9.5	1225	6-10d 2-10dx1 1/2"		6000.18	IUS2.37/9.5	935	8-10d -		6000.18	SUR/L2.37/9	1417	14-16d 6-10dx1 1/2"	
	6500.18	ITS2.56/9.5	1253	6-10d 2-10dx1 1/2"		6500.18	IUS2.56/9.5	935	8-10d -		6500.18	SUR/L2.56/9	1417	14-16d 6-10dx1 1/2"	
11 1/8"	5000.17	ITS2.06/11.88	1068	6-10d 2-10dx1 1/2"	11 1/8"	5000.17	IUS2.06/11.88	1068	10-10d -	11 1/8"	5000.17	SUR/L2.06/11	1467	14-16d 6-10dx1 1/2"	
	6000.18	ITS2.37/11.88	1237	6-10d 2-10dx1 1/2"		6000.18	IUS2.37/11.88	1170	10-10d -		6000.18	SUR/L2.37/11	1467	16-16d 6-10dx1 1/2"	
	6500.18	ITS2.56/11.88	1237	6-10d 2-10dx1 1/2"		6500.18	IUS2.56/11.88	1170	10-10d -		6500.18	SUR/L2.56/11	1467	14-16d 2-10dx1 1/2"	
	60 2.0	ITS2.37/11.88	1210	6-10d 2-10dx1 1/2"		60 2.0	IUS2.37/11.88	1170	10-10d -		60 2.0	SUR/L2.37/11	1466	14-16d 6-10dx1 1/2"	
	90 2.0	ITS3.56/11.88	1478	6-10d 2-10dx1 1/2"		90 2.0	IUS3.56/11.88	1405	10-10d -		90 2.0	SUR/L410	1860	14-16d 6-16d	
	5000.17	ITS2.06/14	1081	6-10d 2-10dx1 1/2"	14"	5000.17	IUS2.06/14	1081	12-10d -	14"	5000.17	SUR/L2.06/11	1693	18-16d 8-10dx1 1/2"	
	6000.18	ITS2.37/14	1262	6-10d 2-10dx1 1/2"		6000.18	IUS2.37/14	1262	12-10d -		6000.18	SUR/L2.37/14	1693	18-16d 8-10dx1 1/2"	
	6500.18	ITS2.56/14	1262	6-10d 2-10dx1 1/2"		6500.18	IUS2.56/14	1262	12-10d -		6500.18	SUR/L2.56/14	1693	18-16d 8-10dx1 1/2"	
	60 2.0	ITS2.37/14	1225	6-10d 2-10dx1 1/2"		60 2.0	IUS2.37/14	1225	12-10d -		60 2.0	SUR/L2.37/14	1689	18-16d 8-10dx1 1/2"	
	90 2.0	ITS3.56/14	1507	6-10d 2-10dx1 1/2"		90 2.0	IUS3.56/14	1405	12-10d -		90 2.0	SUR/L414	2035	18-16d 8-16d	
	6000.18	ITS2.37/16	1268	6-10d 2-10dx1 1/2"	16"	6000.18	IUS2.37/16	1268	14-10d -	16"	6000.18	SUR/L2.37/14	1920	18-16d 8-10dx1 1/2"	
	6500.18	ITS2.56/16	1362	6-16d 2-10dx1 1/2"		6500.18	IUS2.56/16	1268	14-10d -		6500.18	SUR/L2.56/14	1920	18-16d 8-10dx1 1/2"	
	60 2.0	ITS2.37/16	1228	6-16d 2-10dx1 1/2"		60 2.0	IUS2.37/16	1228	14-10d -		60 2.0	SUR/L2.37/14	1912	18-16d 8-10dx1 1/2"	
	90 2.0	ITS3.56/16	1520	6-10d 2-10dx1 1/2"		90 2.0	IUS3.56/16	1640	14-10d -		90 2.0	SUR/L414	2235	18-16d 8-16d	
18"	90 2.0	<b>MIT418</b>	2400	6-16d 2-10dx1 1/2"	18"	90 2.0	<b>MIU3.56/18</b>	2407	22-16d 2-10dx1 1/2"	18"	90 2.0	<b>MIU3.56/20</b>	2395	18-16d 8-16d	
20"	90 2.0	<b>MIT420</b>	2400	6-16d 2-10dx1 1/2"	20"	90 2.0	<b>MIU3.56/20</b>	2564	24-16d 2-10dx1 1/2"	20"	90 2.0	<b>MIU3.56/20</b>	2395	18-16d 8-16d	
Double Joist - Top Flange					Double Joist - Face Mount					Variable Pitch Joist Connector					
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	Joist Depth	BCI®	Hanger	Capacity [lbs]	Fastener	
				Header Joist					Header Joist					Top Plate Rafter	
9 1/2"	5000.17	<b>MIT4.12/9.5</b>	2305	10-16d 2-10dx1 1/2"	9 1/2"	5000.17	<b>MIU4.12/9</b>	2270	14-16d 6-10d	9 1/2"	5000.17	VPA2.06	993	8-10d 2-10dx1 1/2"	
	6000.18	<b>MIT359.5-2</b>	2400	8-16d 2-10dx1 1/2"		6000.18	<b>MIU4.75/9</b>	1860	14-16d 2-10dx1 1/2"		6000.18	VPA35	1225	8-10d 2-10dx1 1/2"	
	6500.18	<b>MIT39.5</b>	2400	8-16d 2-10dx1 1/2"		6500.18	<b>MIU5.12/9</b>	2270	14-16d 2-10dx1 1/2"		6500.18	VPA3	1225	9-10d 2-10dx1 1/2"	
11 1/8"	5000.17	<b>MIT4.12/11.88</b>	2305	10-16d 2-10dx1 1/2"	11 1/8"	5000.17	<b>MIU4.12/11</b>	2840	16-16d 6-10d	11 1/8"	5000.17	VPA2.06	1068	8-10d 2-10dx1 1/2"	
	6000.18	<b>MIT3511.88-2</b>	2000	8-16d 2-10dx1 1/2"		6000.18	<b>MIU4.75/11</b>	2130	16-16d 2-10dx1 1/2"		6000.18	VPA35	1230	8-10d 2-10dx1 1/2"	
	6500.18	<b>MIT311.88-2</b>	2400	8-16d 2-10dx1 1/2"		6500.18	<b>MIU5.12/11</b>	2840	16-16d 2-10dx1 1/2"		6500.18	VPA3	1230	9-10d 2-10dx1 1/2"	
	60 2.0	MIT3511.88-2	2000	8-16d 2-10dx1 1/2"		60 2.0	MIU4.75/11	2130	16-16d 2-10dx1 1/2"		60 2.0	VPA35	1210	9-10d 2-10dx1 1/2"	
	90 2.0	<b>B7.12/18.8</b>	3785	14-16d 6-16d		90 2.0	<b>HU412-2</b>	2145	16-16d 6-16d		90 2.0	VPA4	1230	11-10d 2-10dx1 1/2"	
14"	5000.17	<b>MIT4.12/14</b>	2305	8-16d 2-10dx1 1/2"	14"	5000.17	<b>MIU4.12/14</b>	3125	18-16d 2-10dx1 1/2"	14"	5000.17	VPA2.06	1081	9-10d 2-10dx1 1/2"	
	6000.18	<b>MIT3514-2</b>	2400	8-16d 2-10dx1 1/2"		6000.18	<b>MIU4.75/14</b>	2395	18-16d 2-10dx1 1/2"		6000.18	VPA35	1230	9-10d 2-10dx1 1/2"	
	6500.18	<b>MIT314-2</b>	2400	8-16d 2-10dx1 1/2"		6500.18	<b>MIU5.12/14</b>	3125	18-16d 2-10dx1 1/2"		6500.18	VPA3	1230	9-10d 2-10dx1 1/2"	
	60 2.0	MIT3514-2	2400	8-16d 2-10dx1 1/2"		60 2.0	MIU4.75/14	2395	18-16d 2-10dx1 1/2"		60 2.0	VPA35	1225	9-10d 2-10dx1 1/2"	
	90 2.0	<b>B7.12/14</b>	3800	14-16d 6-10d		90 2.0	<b>HU414-2</b>	2680	20-16d 8-16d		90 2.0	VPA4	1230	11-10d 2-10dx1 1/2"	
16"	6000.18	<b>MIT4.75/16</b>	2305	8-16d 2-10dx1 1/2"	16"	6000.18	<b>MIU4.75/16</b>	2660	20-16d 2-10dx1 1/2"	16"	6000.18	VPA35	1230	9-10d 2-10dx1 1/2"	
	6500.18	<b>MIT5.12/16</b>	2400	8-16d 2-10dx1 1/2"		6500.18	<b>MIU5.12/16</b>	3125	20-16d 2-10dx1 1/2"		6500.18	VPA3	1230	9-10d 2-10dx1 1/2"	
	60 2.0	<b>MIT4.75/16</b>	2305	3-16d 2-10dx1 1/2"		60 2.0	MIU4.75/16	2660	20-16d 2-10dx1 1/2"		60 2.0	VPA35	1225	9-10d 2-10dx1 1/2"	
	90 2.0	<b>B7.12/16</b>	3800	14-16d 6-16d		90 2.0	<b>HU414-2</b>	2680	20-16d 8-16d		90 2.0	VPA4	1230	11-10d 2-10dx1 1/2"	
18"	90 2.0	<b>B7.12/18</b>	3800	3-16d 6-16d	18"	90 2.0	<b>HU414-2</b>	2680	20-16d 8-16d	18"	90 2.0	<b>VPA4</b>	1230	11-10d 2-10dx1 1/2"	
20"	90 2.0	<b>B7.12/20</b>	3800	3-16d 6-16d	20"	90 2.0	<b>HU414-2</b>	2680	20-16d 8-16d	20"	90 2.0	<b>VPA4</b>	1230	11-10d 2-10dx1 1/2"	
Adjustable Height Joist Hanger					Field Slope and Skew Joist Hanger					SIMPSON Strong-Tie CONNECTORS					
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	Joist Depth	BCI®	Hanger	Capacity [lbs]	General Notes	
				Header Joist					Header Joist					- <b>Bold Italic hangers require web stiffeners.</b>	
9 1/2"	5000.17	<b>THAI2.06/22</b>	1181	6-10d 2-10dx1 1/2"	9 1/2"	5000.17	<b>LSSU2.06</b>	995	9-10d 7-10dx1 1/2"	9 1/2"	6000.18	<b>THAI3522</b>	1393	6-10d 2-10dx1 1/2"	- Capacities will vary with different nailing criteria and/or support conditions; contact supplier or Simpson Strong-Tie for further information.
	6000.18	<b>THAI3522</b>	1393	6-10d 2-10dx1 1/2"		6000.18	<b>LSSU135</b>	995	9-10d 7-10dx1 1/2"		6500.18	<b>THAI322</b>	1393	6-10d 2-10dx1 1/2"	- Capacity values shown are either hanger capacity values (see support requirements below) or BCI® Joist end reaction capacities — whichever is less.
	6500.18	<b>THAI322</b>	1393	6-10d 2-10dx1 1/2"		6500.18	<b>LSSUH310</b>	1425	14-10d 12-10dx1 1/2"		5000.17	<b>THAI2.06/22</b>	1443	6-10d 2-10dx1 1/2"	- All capacity values are downward loads at 100% load duration.
11 1/8"	5000.17	<b>THAI2.06/22</b>	1443	6-10d 2-10dx1 1/2"	11 1/8"	5000.17	<b>LSSU2.06</b>	995	9-10d 7-10dx1 1/2"	11 1/8"	6000.18	<b>THAI3522</b>	1443	6-10d 2-10dx1 1/2"	- Use sloped seat hangers when BCI® Joist slope exceeds 1/4" per foot.
	6000.18	<b>THAI3522</b>	1443	6-10d 2-10dx1 1/2"		6000.18	<b>LSSU135</b>	995	9-10d 7-10dx1 1/2"		6500.18	<b>THAI322</b>	1443	6-10d 2-10dx1 1/2"	- Use sloped seat hangers and beveled web stiffeners when BCI® Joist slope exceeds 1/4" per foot.
	6500.18	<b>THAI322</b>	1443	6-10d 2-10dx1 1/2"		6500.18	<b>LSSUH310</b>	1475	14-10d 12-10dx1 1/2"		60 2.0	<b>THAI322</b>	1439	6-10d 2-10dx1 1/2"	- Leave 1/16" clearance (1/8" maximum) between the end of the supported joist and the head of the hanger.
	60 2.0	<b>THAI322</b>	1439	6-10d 2-10dx1 1/2"		60 2.0	<b>LSSU135</b>	995	9-10d 7-10dx1 1/2"		60 2.0	<b>THAI412</b>	1715	6-10d 2-10dx1 1/2"	- At max design capacity shown, hangers may exceed standard 1/8" deflection by 1/32".
	90 2.0	<b>THAI412</b>	1715	6-10d 2-10dx1 1/2"		90 2.0	<b>LSSU410</b>	1625	14-16d 12-10dx1 1/2"		5000.17	<b>THAI2.06/22</b>	1600	6-10d 2-10dx1 1/2"	- For proper installation of the VPA, the 2-10dx1 1/2" joist nails through the bend tabs must be installed at approximately a 45-degree angle.
	6000.18	<b>THAI3522</b>	1600	6-10d 2-10dx1 1/2"		6000.18	<b>LSSU135</b>	995	9-10d 7-10dx1 1/2"		6000.18	<b>THAI3522</b>	1600	6-10d 2-10dx1 1/2"	- Support material assumed to be Versa-Lam® or BOISE GLULAM® or sawn lumber (Douglas fir or southern pine species).
	6500.18	<b>THAI3522</b>	1600	6-10d 2-10dx1 1/2"		6500.18	<b>LSSUH310</b>	1600	14-10d 12-10dx1 1/2"		60 2.0	<b>THAI3522</b>	1582	6-10d 2-10dx1 1/2"	- Minimum support width for single- and double-joist top mount hangers is 3".
	60 2.0	<b>THAI3522</b>	1582	6-10d 2-10dx1 1/2"		60 2.0	<b>LSSU135</b>	995	9-10d 7-10dx1 1/2"		90 2.0	<b>THAI412</b>	1715	6-10d 2-10dx1 1/2"	- Minimum support width for face mount hangers with 10d and 1

## Single Joist - Top Flange



THO

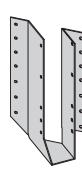
TFL

## Single Joist - Face Mount



THF

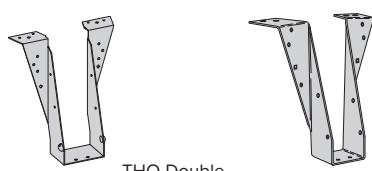
## Face Mount Skewed 45° Joist Hanger



SKH

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing	
				Header	Joist					Header	Joist					Header	Joist
9½"	5000 1.7	THL2095	993	(6) 10d	2-10dx1½"	9½"	5000 1.7	THF20925	910	(8) 10d	2-10dx1½"	9½"	5000 1.7	SKH2020L/R	1153	(14) 10d	10-10dx1½"
	6000 1.8	THL2395	1225	(6) 10d	2-10dx1½"		6000 1.8	THF23925	1275	(12) 10d	2-10dx1½"		6000 1.8	SKH2320L/R	1384	(14) 10d	10-10dx1½"
	6500 1.8	THL2595	1225	(6) 10d	2-10dx1½"		6500 1.8	THF26925	1275	(12) 10d	2-10dx1½"		6500 1.8	SKH2520L/R	1384	(14) 10d	10-10dx1½"
11½"	5000 1.7	TFL20118	1068	(6) 10d	2-10dx1½"	11½"	5000 1.7	THF20112	910	(8) 10d	2-10dx1½"	11½"	5000 1.7	SKH2020L/R	1434	(16) 10d	10-10dx1½"
	6000 1.8	TFL23118	1237	(6) 10d	2-10dx1½"		6000 1.8	THF23118	1300	(14) 10d	2-10dx1½"		6000 1.8	SKH2320L/R	1434	(16) 10d	10-10dx1½"
	6500 1.8	TFL25118	1237	(6) 10d	2-10dx1½"		6500 1.8	THF26112	1300	(14) 10d	2-10dx1½"		6500 1.8	SKH2520L/R	1434	(16) 10d	10-10dx1½"
	60 2.0	TFL23118	1210	(6) 10d	2-10dx1½"		60 2.0	THF23118	1282	(14) 10d	2-10dx1½"		60 2.0	SKH2320L/R	1428	(16) 10d	10-10dx1½"
	90 2.0	THO35118	1558	(10) 10d	2-10dx1½"		90 2.0	THF35112	1585	(16) 10d	2-10dx1½"		90 2.0	SKH410L/R*	1892	(16) 16d	10-16d
14"	5000 1.7	TFL2014	1081	(6) 10d	2-10dx1½"	14"	5000 1.7	THF20140	1081	(12) 10d	2-10dx1½"	14"	5000 1.7	SKH2024L/R	1562	(16) 10d	10-10dx1½"
	6000 1.8	TFL2314	1262	(6) 10d	2-10dx1½"		6000 1.8	THF23140	1350	(18) 10d	2-10dx1½"		6000 1.8	SKH2324L/R	1562	(16) 10d	10-10dx1½"
	6500 1.8	TFL2514	1262	(6) 10d	2-10dx1½"		6500 1.8	THF26140	1350	(18) 10d	2-10dx1½"		6500 1.8	SKH2524L/R	1562	(16) 10d	10-10dx1½"
	60 2.0	TFL2314	1225	(6) 10d	2-10dx1½"		60 2.0	THF23140	1325	(18) 10d	2-10dx1½"		60 2.0	SKH2324L/R	1539	(16) 10d	10-10dx1½"
16"	6000 1.8	TFL2316	1268	(6) 10d	2-10dx1½"	16"	6000 1.8	THF23160	1362	(22) 10d	2-10dx1½"	16"	90 2.0	SKH414L/R*	2035	(22) 16d	10-16d
	6500 1.8	TFL2516	1268	(6) 10d	2-10dx1½"		6500 1.8	THF26160	1362	(22) 10d	2-10dx1½"		6000 1.8	SKH2324L/R	1690	(16) 10d	10-10dx1½"
	60 2.0	TFL2316	1228	(6) 10d	2-10dx1½"		60 2.0	THF23160	1335	(22) 10d	2-10dx1½"		6500 1.8	SKH2524L/R	1690	(16) 10d	10-10dx1½"
	90 2.0	THO35160	1626	(12) 10d	2-10dx1½"		90 2.0	THF35157	1657	(22) 10d	2-10dx1½"		60 2.0	SKH2324L/R	1650	(16) 10d	10-10dx1½"
	90 2.0	THO35180	2389	(14) 10d	2-10dx1½"		90 2.0	THF35165	2407	(24) 10d	8-10dx1½"		90 2.0	SKH414L/R*	2235	(22) 16d	10-16d
20"	90 2.0	THO35200	2553	(14) 10d	2-10dx1½"	20"	90 2.0	THF35165	2564	(24) 10d	8-10dx1½"	20"	90 2.0	SKH418L/R*	2564	(28) 16d	10-16d

## Double Joist - Top Flange



THO Double

BPH

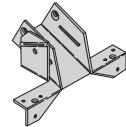
## Double Joist - Face Mount



THF Double

HD

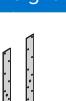
## Variable Pitch Joist Connector



TMP

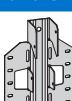
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing		Joist Depth	BCI®	Hanger	Capacity [lbs]	Fastener	
				Header	Joist					Header	Joist					Top Plate	Rafter
9½"	5000 1.7	THO20950-2	2330	(10) 16d	6-10d	9½"	5000 1.7	THF20925-2	1390	(12) 10d	6-10d	9½"	5000 1.7	TMP21	1125	(6) 10d	4-10dx1½"
	6000 1.8	THO23950-2	2825	(10) 10d	6-10d		6000 1.8	THF23925-2	1625	(14) 10d	6-10d		6000 1.8	TMP23	1375	(6) 10d	4-10dx1½"
	6500 1.8	THO25950-2	2650	(10) 16d	6-10d		6500 1.8	THF26925-2	1390	(12) 10d	6-10d		6500 1.8	TMP25	1375	(6) 10d	4-10dx1½"
11½"	5000 1.7	THO20112-2	2330	(10) 16d	6-10d	11½"	5000 1.7	THF20112-2	1855	(16) 10d	6-10d	11½"	5000 1.7	TMP21	1150	(6) 10d	4-10dx1½"
	6000 1.8	THO23112-2	2925	(10) 10d	6-10d		6000 1.8	THF23112-2	1855	(16) 10d	6-10d		6000 1.8	TMP23	1425	(6) 10d	4-10dx1½"
	6500 1.8	THO25112-2	2925	(10) 16d	6-10d		6500 1.8	THF25112-2	1855	(16) 10d	6-10d		6500 1.8	TMP25	1425	(6) 10d	4-10dx1½"
	60 2.0	THO23112-2	2921	(10) 16d	6-10d		60 2.0	THF23112-2	1855	(16) 10d	6-10d		60 2.0	TMP23	1425	(6) 10d	4-10dx1½"
	90 2.0	BPH7118	3455	(10) 16d	6-10d		90 2.0	BHD7120	2255	(16) 16d	6-10d		90 2.0	TMP4	1800	(6) 10d	4-10dx1½"
14"	5000 1.7	THO20140-2	2330	(10) 16d	6-10d	14"	5000 1.7	THF20140-2	2320	(20) 10d	6-10d	14"	5000 1.7	TMP21	1150	(6) 10d	4-10dx1½"
	6000 1.8	THO23140-2	3350	(12) 10d	6-10d		6000 1.8	THF23140-2	2540	(20) 10d	6-10d		6000 1.8	TMP23	1525	(6) 10d	4-10dx1½"
	6500 1.8	THO25140-2	3050	(12) 16d	6-10d		6500 1.8	THF25140-2	2500	(20) 10d	6-10d		6500 1.8	TMP25	1525	(6) 10d	4-10dx1½"
	60 2.0	THO23140-2	3335	(12) 16d	6-10d		60 2.0	THF23140-2	2540	(20) 10d	6-10d		60 2.0	TMP23	1525	(6) 10d	4-10dx1½"
16"	6000 1.8	THO23160-2	3535	(12) 16d	6-10d	16"	6000 1.8	THF23160-2	3050	(24) 10d	6-10d	16"	6000 1.8	TMP23	1550	(6) 10d	4-10dx1½"
	6500 1.8	THO25160-2	3535	(12) 16d	6-10d		6500 1.8	THF25160-2	3000	(24) 10d	6-10d		6500 1.8	TMP25	1550	(6) 10d	4-10dx1½"
	60 2.0	THO23160-2	3535	(12) 16d	6-10d		60 2.0	THF23160-2	3050	(24) 10d	6-10d		60 2.0	TMP23	1550	(6) 10d	4-10dx1½"
	90 2.0	BPH7116	3455	(10) 16d	6-10d		90 2.0	BHD7160	3280	(20) 16d	6-10d		90 2.0	TMP4	1850	(6) 10d	4-10dx1½"
	6000 1.8	THO23160-2	3535	(12) 16d	6-10d		6000 1.8	THF23160-2	3050	(24) 10d	6-10d		6000 1.8	TMP23	1550	(6) 10d	4-10dx1½"
18"	6500 1.8	THO25160-2	3535	(12) 16d	6-10d	18"	6500 1.8	THF25160-2	3000	(24) 10d	6-10d	18"	60 2.0	TMP23	1550	(6) 10d	4-10dx1½"
	60 2.0	THO23160-2	3535	(12) 16d	6-10d		60 2.0	THF23160-2	3050	(24) 10d	6-10d		90 2.0	TMP4	1900	(6) 10d	4-10dx1½"
	90 2.0	BPH7118	3510	(10) 16d	6-10d		90 2.0	BHD7180	3920	(28) 16d	6-10d		90 2.0	TMP4	1970	(6) 10d	4-10dx1½"
	20"	90 2.0	BPH7120	3510	(10) 16d		20"	90 2.0	BHD7180	3920	(28) 16d		90 2.0	TMP4	1970	(6) 10d	4-10dx1½"
	90 2.0	THO35165	2389	(10) 16d	6-10d		90 2.0	THF35165	2407	(24) 10d	8-10dx1½"		90 2.0	SKH418L/R*	2407	(28) 16d	10-16d

## Adjustable Height Joist Hanger



MSH

## Field Slope and Skew Joist Hanger



LSSH

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# FASTER. STRONGER. EASIER.

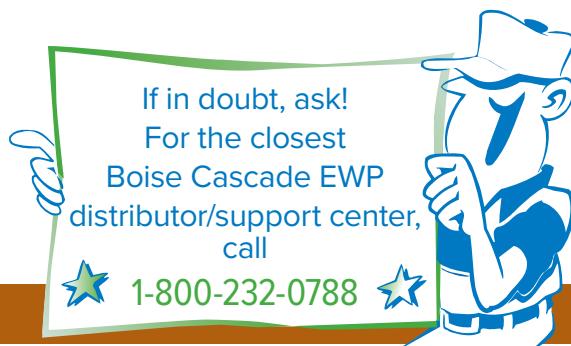


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