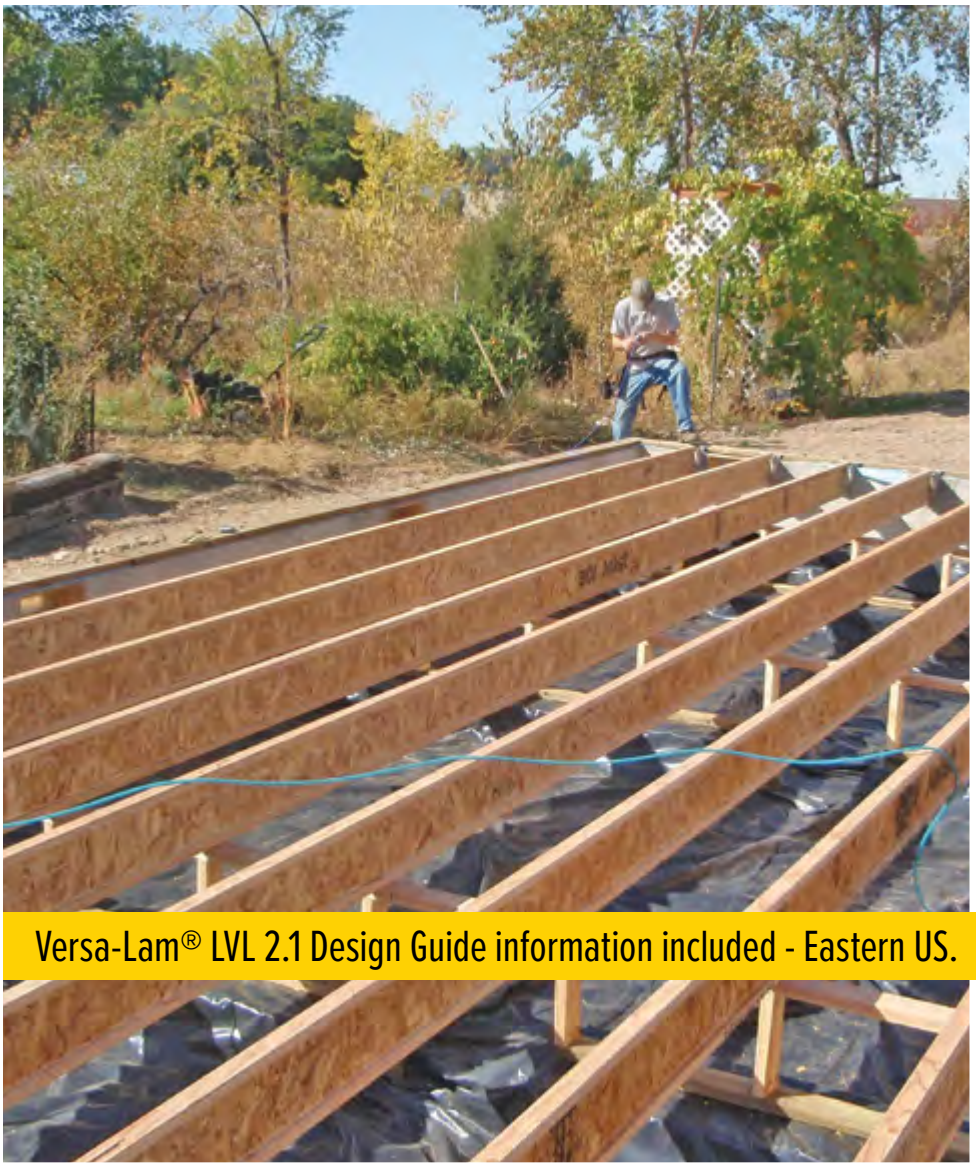
Boise Cascade®
ENGINEERED WOOD PRODUCTS

EASTERN SPECIFIER GUIDE

For Products Manufactured in Alexandria, Louisiana and Thorsby, Alabama



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

Reorder **MTP-E7000**
Rev. 5/21

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 and Versa-Rim® (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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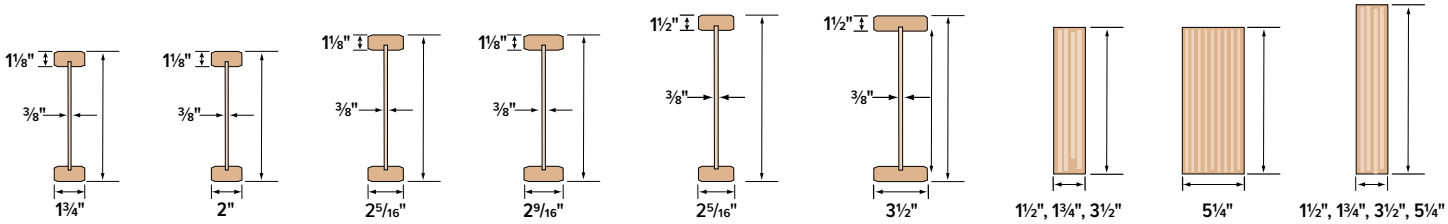
Eastern Product Profiles



Product depths offered are listed below the product name. BCI® 60 and 90 deep depths are available from White City.
Some products may not be available in all markets. Contact your Boise Cascade EWP representative for availability.
BCI® and Versa-Lam® products shall be installed in dry-use applications only, per their respective ICC-ES/APA ESR evaluation reports.

BCI® Joist Architectural Specifications

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

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

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

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

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

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

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

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

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

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.***

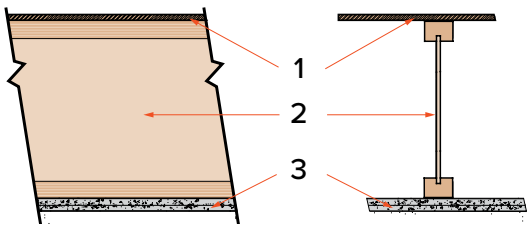
The floor span tables listed below offer three very different performance options, based on performance requirements of the homeowner.

		★★★ THREE STAR ★★★					★★★★ FOUR STAR ★★★★					CAUTION	★ MINIMUM STIFFNESS ALLOWED BY CODE ★			CAUTION
		Live Load deflection limited to L/480: The common industry and design community standard for residential floor joists, **33% stiffer than L/360 code minimum.** However, floor performance may still be an issue in certain applications, especially with 9½" and 11⅞" deep joists without a direct-attached ceiling.					**Live Load deflection limited to L/960+:** In addition to providing a floor that is **100% stiffer than the three star floor**, field experience has been incorporated into the values to provide a floor with a premium performance level for the more discriminating homeowner.					**Live Load deflection limited to L/360:** Floors that **meet the minimum building code** L/360 criteria are structurally sound to carry the specified loads; however, there is a much higher risk of floor performance issues. This table should only be used for applications where floor performance is not a concern.				
Joist Depth	BCI® Joist Series	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	32" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	32" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	32" o.c.
9½"	4500s 1.8	16'-11"	15'-6"	14'-8"	13'-7"	11'-9"	11'-6"	11'-6"	10'-0"	10'-0"	9'-7"	18'-9"	16'-8"	15'-3"	13'-7"	11'-9"
	5000s 1.8	17'–6"	16'–0"	15–2"	14'–1"	12'–5"	11'–6"	11'–6"	10'–0"	10'–0"	9'–11"	19'–4"	17'–9"	16'–4"	14'–7"	12'–5"
	6000s 1.8	18'–2"	16'–8"	15'–8"	14'–8"	13'–4"	11'–6"	11'–6"	10'–0"	10'–0"	10'–0"	20'–2"	18'–5"	17'–5"	15'–9"	13'–8"
	6500s 1.8	18'–8"	17'–1"	16'–1"	15'–0"	13'–8"	11'–6"	11'–6"	10'–0"	10'–0"	10'–0"	20'–8"	18'–11"	17'–10"	16'–7"	14'–3"
11⅞"	4500s 1.8	20'-0"	18'-4"	17'-3"	15'-5"	13'-4"	15'-6"	14'-3"	13'-5"	12'-6"	11-4"	21'-10"	18'-11"	17'-3"	15'-5"	13'-4"
	5000s 1.8	20'–9"	19'–0"	17'–11"	16'–7"	13'–4"	15'–6"	14'–9"	13'–11"	12'–11"	11'–9"	23'–0"	20'–4"	18'–6"	16'–7"	13'–4"
	6000s 1.8	21'–7"	19'–8"	18'–7"	17'–4"	14'–10"	15'–6"	15'–4"	14'–5"	13'–5"	12'–1"	23'–10"	21'–10"	20'–0"	17'–11"	14'–10"
	6500s 1.8	22'–2"	20'–3"	19'–2"	17'–10"	14'–10"	16'–0"	15'–10"	14'–11"	13'–10"	12'–7"	24'–6"	22'–5"	21'–1"	18'–10"	14'–10"
	60s 2.0	23'–7"	21'–6"	20'–4"	18'–11"	16'–4"	18'–0"	16'–9"	15'–9"	14'–8"	13'–3"	26'–1"	23'–10"	22'–6"	21'–0"	16'–4"
	90s 2.0	26'–7"	24'–3"	22'–10"	21'–3"	19'–4"	19'–0"	18'–10"	17'–8"	16'–5"	14'–10"	29'–5"	26'–10"	25'–3"	23'–6"	19'–4"
14"	4500s 1.8	22'-9"	20'-7"	18'-9"	16'-9"	13'-11"	17'-10"	16'-3"	15'-4"	14'-3"	13'-0"	23'-10"	20'-7"	18'-9"	16'-9"	13'-11"
	5000s 1.8	23'–7"	21'–7"	20'–2"	18'–0"	13'–11"	18'–6"	16'–10"	15'–11"	14'–9"	13'–5"	25'–7"	22'–1"	20'–2"	18'–0"	13'–11"
	6000s 1.8	24'–6"	22'–5"	21'–2"	19'–6"	15'–5"	19'–2"	17'–6"	16'–6"	15'–4"	13'–11"	27'–1"	23'–11"	21'–10"	19'–6"	15'–5"
	6500s 1.8	25'–2"	23'–0"	21'–8"	20'–2"	15'–5"	19'–8"	17'–11"	16'–11"	15'–8"	14'–3"	27'–9"	25'–2"	22'–11"	20'–6"	15'–5"
	60s 2.0	26'–9"	24'–5"	23'–0"	21'–5"	16'–4"	20'–11"	19'–0"	17'–11"	16'–7"	15'–1"	29'–7"	27'–0"	25'–6"	21'–10"	16'–4"
	90s 2.0	30'–1"	27'–5"	25'–10"	24'–0"	19'–6"	23'–6"	21'–4"	20'–0"	18'–6"	16'–9"	33'–3"	30'–4"	28'–7"	26'–0"	19'–6"
16"	4500s 1.8	25'-2"	22'-0"	20'-1"	17'-11"	14'-1"	19'-9"	18'-0"	17'-0"	15'-10"	14'-1"	25'-5"	22'-0"	20'-1"	17'-11"	14'-1"
	6000s 1.8	27'–0"	24'–9"	23'–4"	20'–10"	15'–9"	21'–2"	19'–4"	18'–2"	16'–11"	15'–4"	29'–6"	25'–6"	23'–4"	20'–10"	15'–9"
	6500s 1.8	27'–9"	25'–4"	23'–11"	21'–1"	15'–9"	21'–9"	19'–9"	18'–8"	17'–4"	15'–8"	30'–8"	26'–11"	24'–6"	21'–1"	15'–9"
	60s 2.0	29'–7"	27'–0"	25'–6"	21'–10"	16'–4"	23'–2"	21'–1"	19'–10"	18'–5"	16'–4"	32'–8"	29'–10"	27'–4"	21'–10"	16'–4"
	90s 2.0	33'–4"	30'–4"	28'–7"	26'–2"	19'–7"	26'–0"	23'–7"	22'–2"	20'–6"	18'–7"	36'–10"	33'–7"	31'–8"	26'–2"	19'–7"

- Span table is based on a residential floor load of 40 psf live load and 10 psf dead load (12 psf dead load for 90s 2.0 joists).
- Span values assume 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 - ⅞" 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.
- 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.

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

One-Hour Fire Resistance Assembly



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.

ICC-ES®/APA® ESR-1336

FIRE ASSEMBLY COMPONENTS

1. Min. 23/32" thick tongue and groove sheathing (exterior glue), installed with long edge perpendicular to joist length, staggered one joist spacing with adjacent sheets, and glued to joists with construction adhesive.
2. BCI® Joists at 24" o.c. or less.
3. Two layers ⅝" Type X or two layers ½" Type C gypsum board, installed per Figures 2 or 3 of ICC-ES®/APA® ESR-1336.

SOUND ASSEMBLY COMPONENTS

When constructed with resilient channels

- Add carpet & pad to fire assembly:
- Add 3½" glass fiber insulation to fire assembly:
- Add an additional layer of minimum ⅝" sheathing and 9½" glass fiber insulation to fire assembly:

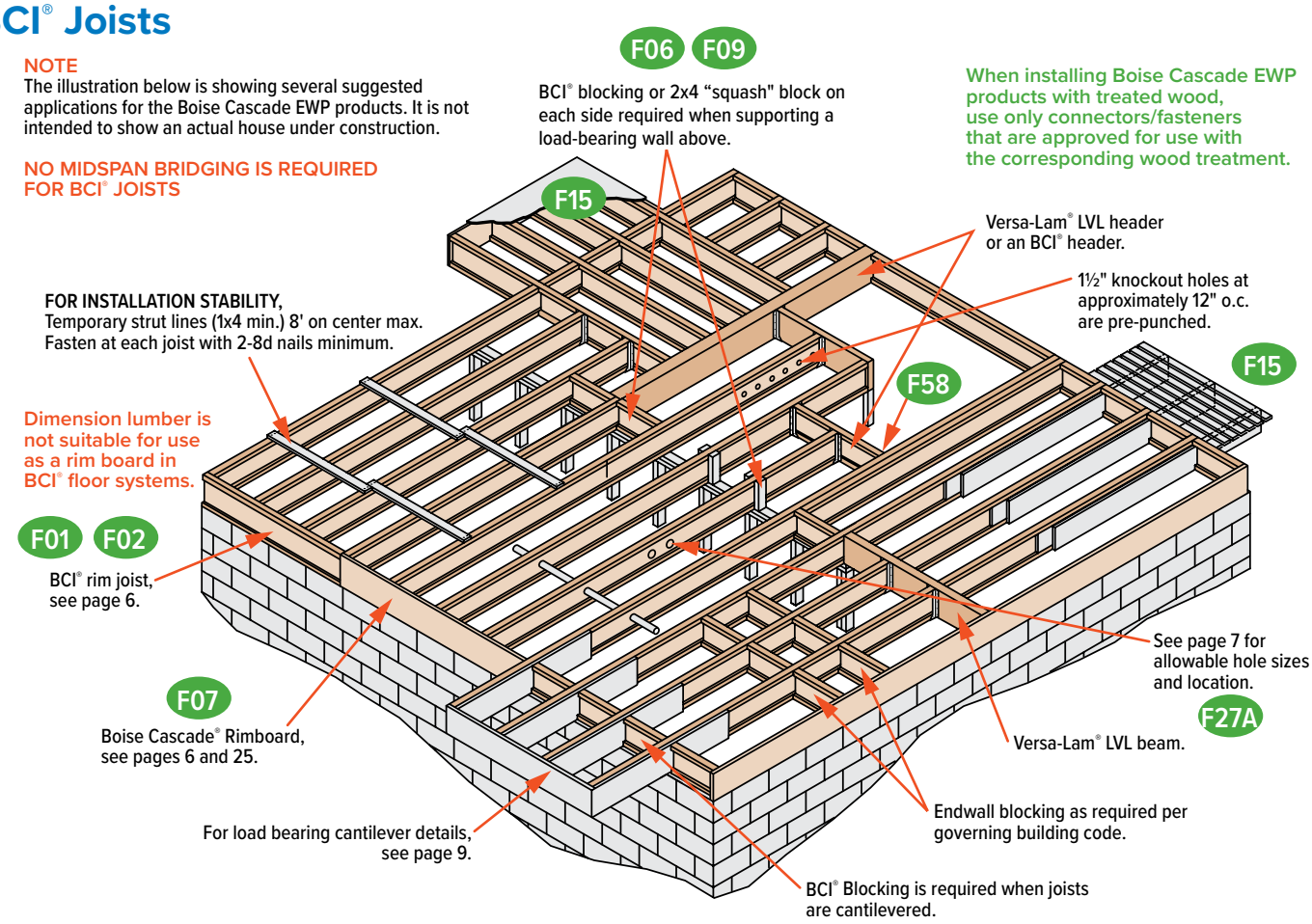
STC=54	IIC=68	or
STC=55	IIC=46	or
STC=61	IIC=50	

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

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



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

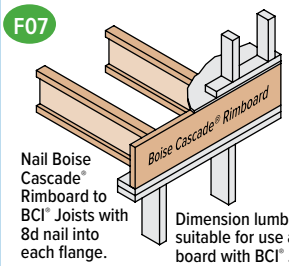
There are some differences between engineered wood products and traditional lumber products in terms of product handling: Avoid handling and storing BCI® joists in the flat direction. Versa-Lam® LVL is denser and due to the coating applied to the surface, can be more apt to sliding. Please consider these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

Floor Framing Details

Additional floor framing details available with BC Framer® software

END BEARING DETAILS

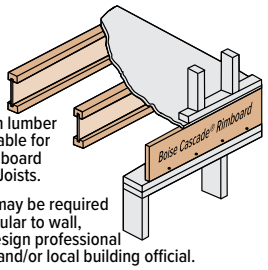
F07



Nail Boise Cascade® Rimboard to BCI® Joists with 8d nail into each flange.

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

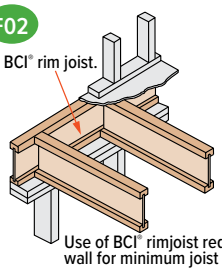
F07A



Dimension lumber is not suitable for use as rimboard with BCI® Joists.

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

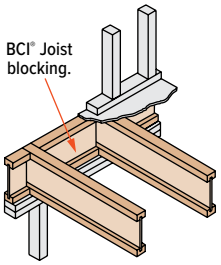
F02



BCI® rim joist.

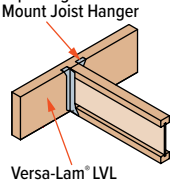
Use of BCI® rimjoist requires 2x6 wall for minimum joist bearing.

F01



BCI® Joist blocking.

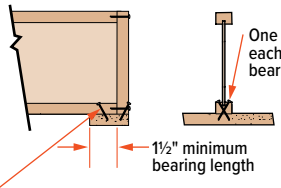
F27A



Top Flange or Face Mount Joist Hanger

Versa-Lam® LVL

F52

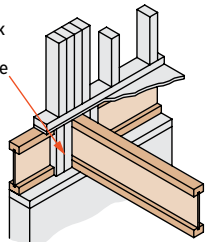


One 8d nail each side at bearing

1½" minimum bearing length

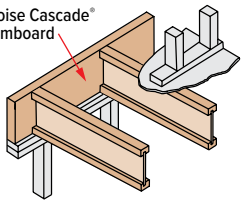
To limit splitting flange, start nails at least 1½" from end. Nails may need to be driven at an angle to limit splitting of bearing plate.

F08



Solid block all posts from above to bearing below.

F03



Boise Cascade® Rimboard

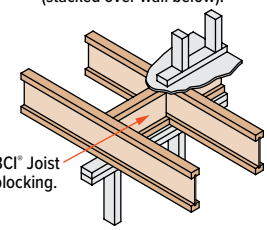
NOTE: BCI® floor joist must be designed to carry wall above when not stacked over wall below.

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

INTERMEDIATE BEARING DETAILS

F06

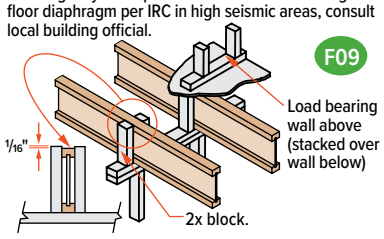
For load bearing wall above (stacked over wall below).



BCI® Joist blocking.

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

F09



Load bearing wall above (stacked over wall below)

2x block.

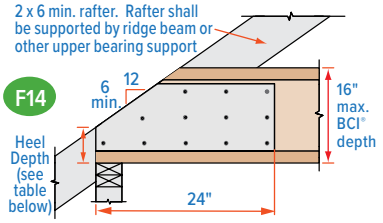
Double Squash Block Vertical Load [lb/ft]				
Size	Joist Spacing [in]			
	12	16	19.2	24
2x4	4463	3347	2789	2231
2x6	7013	5259	4383	3506

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

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.

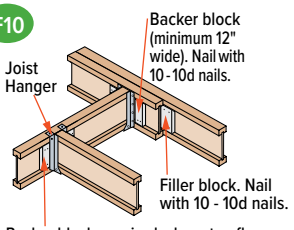
F14



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

End Wall Bearing	Minimum Heel Depth					
	Roof Pitch					
	6/12	7/12	8/12	9/12	10/12	12/12
2 x 4	4⅜"	4⁵/₁₆"	4¼"	4¼"	4¼"	4¼"
2 x 6	3⅜"	3³/₁₆"	2⁵/₁₆"	2¾"	2⁹/₁₆"	2¼"

F10



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

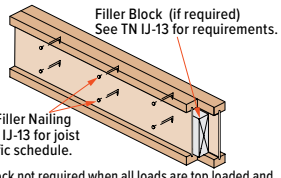
Joist Hanger

Filler block. Nail with 10 - 10d nails.

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

F58

Double BCI® Joist Connection

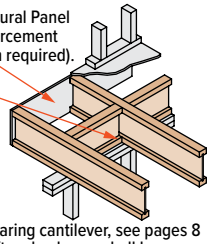


Filler Block (if required) See TN IJ-13 for requirements.

Web Filler Nailing See TN IJ-13 for joist specific schedule.

- Filler block not required when all loads are top loaded and evenly applied to each ply (except BCI® 90 and AJS® 25, 30). Side loads and/or uneven top loads require filler block.
- See Boise Cascade Technical Note IJ-13 for further information.
- Fasten floor sheathing to each ply per diaphragm nailing schedule.

F05



Structural Panel reinforcement (when required).

BCI® Joist blocking required for cantilever.

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

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

NAILING REQUIREMENTS

- BCI® rim joist, rim board or closure panel to BCI® joist:
  - Rims or closure panel 15/16 inches thick and less: 2-8d nails, one each in the top and bottom flange.
  - BCI® 4500s/5000s rim joist: 2-10d box nails, one each in the top and bottom flange.
  - BCI® 6000s/60s rim joist: 2-16d box nails, one each in the top and bottom flange.
  - BCI® 6500s/90s rim joist: Toe-nail top flange to rim joist with 2-10d box nails, one each side of flange.
- BCI® rim joist, rim board or BCI® blocking panel to support:
  - Min. 8d nails @ 6" o.c. per IRC®.
  - Connection per design professional of record's specification for shear transfer.
- BCI® joist to support:
  - 2-8d nails, one on each side of the web, placed 1½ 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 at 6" o.c. on edges and at 12" o.c. in the field (IRC® Table R602.3(1)).
  - See closest allowable nail spacing limits on page 24 for floor diaphragm nailing specified at closer spacing than IRC®.
  - For full lateral stability, maximum nail spacing for bracing is 18" for BCI® 4500s and 5000s, and 24" for larger BCI® joist series.
  - 14 gauge staples may be substituted for 8d nails if the staples penetrate at least 1 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
4500s 1.8	⅝" or ¾" wood panels	Two ⅝" wood panels or 2 x _
5000s 1.8	¾" or ⅞" wood panels	Two ¾" wood panels or 2 x _
6000s 1.8	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
6500s 1.8	1⅛" or two ⅝" wood panels	2 x _ + ⅝" or ¾" wood panel
60s 2.0	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
90s 2.0	2 x _ lumber	Double 2 x _ lumber

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

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 of the ground on stickers.

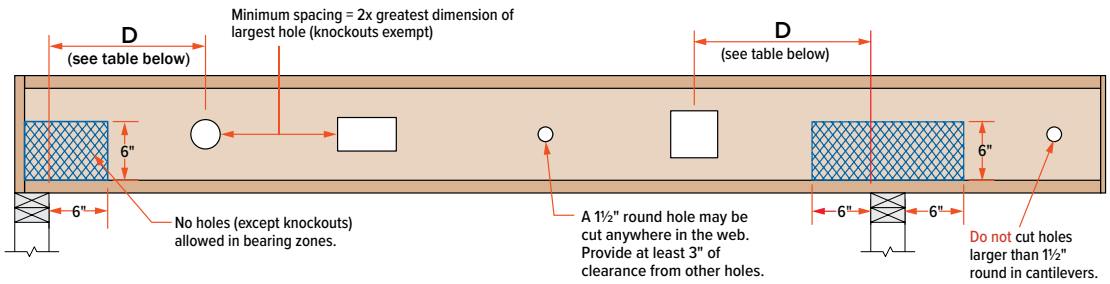
BCI® RIM JOISTS AND BLOCKING

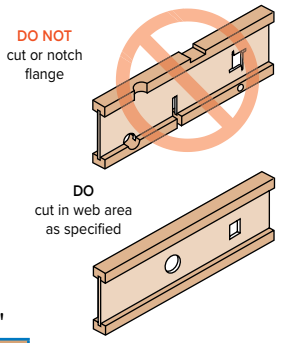
Depth [in]	Series	Vertical Load Capacity (plf)	
		No W.S.(1)	W.S.(2)
9½"	4500s 1.8, 5000s 1.8, 6000s 1.8, 6500s 1.8	2300	N/A
11⅞"	4500s 1.8, 5000s 1.8, 6000s 1.8, 6500s 1.8	2150	N/A
	60s 2.0, 90s 2.0	2500	N/A
14"	4500s 1.8, 5000s 1.8, 6000s 1.8, 6500s 1.8	2000	N/A
	60s 2.0, 90s 2.0	2400	N/A
16"	4500s 1.8, 6000s 1.8, 6500s 1.8	1900	2500
	60s 2.0, 90s 2.0	2300	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

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"

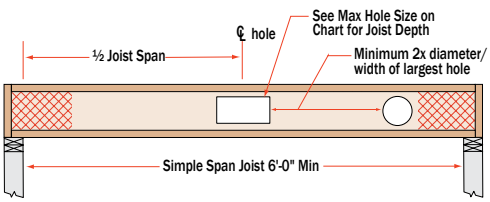
MINIMUM DISTANCE (D) FROM ANY SUPPORT TO THE CENTERLINE OF THE HOLE															
Round Hole Diameter [in]			2	3	4	5	6	6½	7	8	8⅞	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	3	5	6	7	-	-	-	-	-	-	-
Any 9½" Joist	Span [ft]	8	1'-0"	1'-1"	1'-5"	2'-1"	2'-9"	3'-1"	3'-5"							
		12	1'-0"	1'-2"	2'-2"	3'-2"	4'-2"	4'-8"	5'-2"							
		16	1'-0"	1'-7"	2'-11"	4'-3"	5'-7"	6'-3"	6'-11"							
Round Hole Diameter [in]			2	3	4	5	6	6½	7	8	8⅞	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	2	3	4	5	7	8	-	-	-	-	-
Any 11⅞" Joist	Span [ft]	8	1'-0"	1'-1"	1'-5"	1'-10"	2'-4"	2'-7"	2'-10"	3'-4"	3'-9"					
		12	1'-0"	1'-4"	2'-1"	2'-10"	3'-7"	3'-11"	4'-3"	5'-0"	5'-8"					
		16	1'-0"	1'-10"	2'-10"	3'-9"	4'-9"	5'-3"	5'-9"	6'-9"	7'-7"					
		20	1'-1"	2'-3"	3'-6"	4'-9"	5'-11"	6'-7"	7'-2"	8'-5"	9'-6"					
Round Hole Diameter [in]			2	3	4	5	6	6½	7	8	8⅞	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	-	2	3	3	5	6	6	8	9	-	-
Any 14" Joist	Span [ft]	8	1'-0"	1'-1"	1'-2"	1'-3"	1'-8"	1'-10"	2'-1"	2'-6"	2'-10"	2'-11"	3'-4"	3'-8"		
		12	1'-0"	1'-1"	1'-3"	1'-10"	2'-6"	2'-10"	3'-1"	3'-9"	4'-3"	4'-4"	5'-0"	5'-7"		
		16	1'-0"	1'-1"	1'-8"	2'-6"	3'-4"	3'-9"	4'-2"	5'-0"	5'-8"	5'-10"	6'-8"	7'-5"		
		20	1'-0"	1'-1"	2'-1"	3'-2"	4'-2"	4'-8"	5'-2"	6'-3"	7'-2"	7'-3"	8'-4"	9'-4"		
		24	1'-0"	1'-4"	2'-6"	3'-9"	5'-0"	5'-8"	6'-3"	7'-6"	8'-7"	8'-9"	10'-0"	11'-2"		
Round Hole Diameter [in]			2	3	4	5	6	6½	7	8	8⅞	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	-	-	-	2	3	5	5	6	8	9	10
Any 16" Joist	Span [ft]	8	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-3"	1'-3"	1'-7"	1'-11"	2'-0"	2'-5"	2'-9"	3'-2"	3'-7"
		12	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-6"	1'-10"	2'-5"	2'-11"	3'-0"	3'-7"	4'-2"	4'-9"	5'-4"
		16	1'-0"	1'-1"	1'-2"	1'-2"	1'-8"	2'-1"	2'-6"	3'-3"	3'-11"	4'-0"	4'-10"	5'-7"	6'-4"	7'-2"
		20	1'-0"	1'-1"	1'-2"	1'-2"	2'-1"	2'-7"	3'-1"	4'-1"	4'-11"	5'-1"	6'-0"	7'-0"	8'-0"	8'-11"
		24	1'-0"	1'-1"	1'-2"	1'-4"	2'-6"	3'-1"	3'-9"	4'-11"	5'-11"	6'-1"	7'-3"	8'-5"	9'-7"	10'-9"

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

Large Rectangular Holes in BCI® Joists

Hole 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

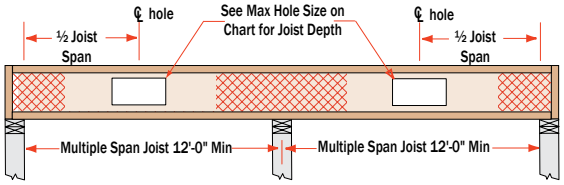


Notes:

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

Joist Depth	Maximum Hole Size	
	Simple Span	Multiple Span
9½"	6" x 14"	6" x 12"
11⅞"	7" x 16" 8" x 15"	8" x 12"
14"	9" x 16" 10" x 15"	8" x 15"
16"	9" x 18" 11" x 16"	10" x 14"

Multiple Span Joist



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

Reinforced Load Bearing Cantilever Table

BCI® Joists

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
9½"	4500s 1.8	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	X	X	X	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	X	X	X	X	X	X	X	X
		38	0	X	X	X	X	X	X	X	X
		40	0	X	X	X	X	X	X	X	X
		42	0	X	X	X	X	X	X	X	X
	5000s 1.8	24	0	0	0	0	0	X	0	X	X
		26	0	0	0	0	0	X	0	X	X
		28	0	0	1	0	X	X	X	X	X
		30	0	0	1	0	X	X	X	X	X
		32	0	0	X	0	X	X	X	X	X
		34	0	0	X	X	X	X	X	X	X
		36	0	0	X	X	X	X	X	X	X
		38	0	X'	X	X	X	X	X	X	X
		40	0	X'	X	X	X	X	X	X	X
	6000s 1.8	24	0	0	0	0	0	0	0	X	X
		26	0	0	0	0	0	X	0	X	X
		28	0	0	0	0	0	X	X	X	X
		30	0	0	0	0	0	X	X	X	X
		32	0	0	0	0	X	X	X	X	X
		34	0	0	X	0	X	X	X	X	X
		36	0	0	X	0	X	X	X	X	X
		38	0	0	X	X	X	X	X	X	X
		40	0	0	X	X	X	X	X	X	X
	6500s 1.8	24	0	0	0	0	0	0	0	0	X
		26	0	0	0	0	0	0	0	X	X
		28	0	0	0	0	0	0	0	X	X
		30	0	0	0	0	0	X	0	X	X
		32	0	0	0	0	0	X	0	X	X
		34	0	0	0	0	X	X	X	X	X
		36	0	0	X	0	X	X	X	X	X
		38	0	0	X	0	X	X	X	X	X
		40	0	0	X	0	X	X	X	X	X
11⅞"	4500s 1.8	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	X	0	WS	X
		30	0	0	0	0	0	X	0	WS	X
		32	0	0	WS	0	0	X	0	X	X
		34	0	0	WS	0	0	X	0	X	X
		36	0	0	WS	0	WS	X	0	X	X
		38	0	0	X	0	X	X	X	X	X
		40	0	0	X	0	X	X	X	X	X
		42	0	0	X	0	X	X	X	X	X
	5000s 1.8	24	0	0	0	0	0	WS	0	0	1
		26	0	0	0	0	0	WS	0	0	1
		28	0	0	0	0	0	WS	0	0	X
		30	0	0	WS	0	0	1	0	0	X
		32	0	0	WS	0	0	1	0	1	X
		34	0	0	WS	0	WS	X	0	X	X
		36	0	0	WS	0	WS	X	0	X	X
		38	0	0	WS	0	WS	X	X	X	X
		40	0	0	1	0	1	X	X	X	X
	6000s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	1
		28	0	0	0	0	0	WS	0	0	1
		30	0	0	0	0	0	WS	0	0	X
		32	0	0	0	0	0	1	0	WS	X
		34	0	0	WS	0	0	1	0	1	X
		36	0	0	WS	0	0	1	0	X	X
		38	0	0	WS	0	0	X	0	X	X
		40	0	0	1	0	WS	X	X	X	X

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
11⅞"	6500s 1.8	24	0	0	0	0	0	0	0	0	1
		26	0	0	0	0	0	0	0	0	X
		28	0	0	0	0	0	0	0	0	X
		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	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	0	X	0	X	X
	60s 2.0	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	1	X
		34	0	0	0	0	0	X	0	1	X
		36	0	0	WS	0	0	X	0	1	X
		38	0	0	1	0	0	X	0	1	X
		40	0	0	1	0	1	X	1	X	X
	90s 2.0	24	0	0	0	0	0	0	0	0	0
		26	0	0	0	0	0	0	0	0	0
		28	0	0	0	0	0	0	0	0	0
		30	0	0	0	0	0	0	0	0	0
		32	0	0	0	0	0	0	0	0	0
		34	0	0	0	0	0	0	0	0	1
		36	0	0	0	0	0	0	0	0	1
		38	0	0	0	0	0	0	0	0	1
		40	0	0	0	0	0	0	0	0	2
14"	4500s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	WS	0	0	WS
		28	0	0	0	0	0	WS	0	0	1
		30	0	0	0	0	0	WS	0	WS	X
		32	0	0	0	0	0	WS	0	WS	X
		34	0	0	WS	0	0	1	0	WS	X
		36	0	0	WS	0	0	X	0	WS	X
		38	0	0	WS	0	WS	X	0	X	X
		40	0	0	WS	0	WS	X	WS	X	X
		42	0	0	WS	0	WS	X	WS	X	X
	5000s 1.8	24	0	0	0	0	0	WS	0	0	WS
		26	0	0	0	0	0	WS	0	0	WS
		28	0	0	0	0	0	WS	0	WS	1
		30	0	0	WS	0	0	WS	0	WS	1
		32	0	0	WS	0	0	WS	0	WS	2
		34	0	0	WS	0	WS	1	0	WS	X
		36	0	0	WS	0	WS	1	0	WS	X
		38	0	0	WS	0	WS	1	WS	1	X
		40	0	0	WS	0	WS	2	WS	1	X
	6000s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	WS	0	0	WS
		30	0	0	0	0	0	WS	0	0	1
		32	0	0	0	0	0	WS	0	WS	1
		34	0	0	0	0	0	WS	0	WS	1
		36	0	0	WS	0	0	WS	0	WS	1
		38	0	0	WS	0	0	1	0	1	2
		40	0	0	WS	0	WS	1	0	1	2
	6500s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	WS	0	0	WS
		30	0	0	0	0	0	WS	0	0	1
		32	0	0	0	0	0	WS	0	WS	1
		34	0	0	0	0	0	WS	0	WS	2
		36	0	0	WS	0	0	WS	0	WS	2
		38	0	0	WS	0	0	1	0	1	2
		40	0	0	WS	0	WS	1	0	1	2

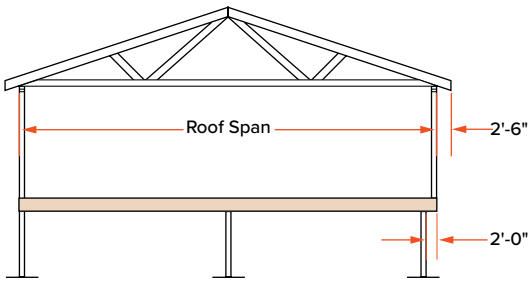
Joist Depth [in]	Joist Series	Roof Truss Span [ft]	Roof Total Load [psf]								
			35			45			55		
			Joist Spacing [in]								
			16	19.2	24	16	19.2	24	16	19.2	24
14"	60s 2.0	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	0	0	0	WS
		30	0	0	0	0	0	WS	0	0	1
		32	0	0	0	0	0	WS	0	0	1
		34	0	0	0	0	0	WS	0	0	1
		36	0	0	0	0	0	WS	0	WS	2
		38	0	0	0	0	0	1	0	WS	X
		40	0	0	WS	0	0	1	0	1	X
	90s 2.0	24	0	0	0	0	0	0	0	0	0
		26	0	0	0	0	0	0	0	0	0
		28	0	0	0	0	0	0	0	0	0
		30	0	0	0	0	0	0	0	0	0
		32	0	0	0	0	0	0	0	0	0
		34	0	0	0	0	0	0	0	0	WS
		36	0	0	0	0	0	0	0	0	1
		38	0	0	0	0	0	0	0	0	1
		40	0	0	0	0	0	0	0	0	1
16"	4500s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	WS	0	0	WS
		28	0	0	0	0	0	WS	0	0	WS
		30	0	0	0	0	0	WS	0	WS	WS
		32	0	0	0	0	0	WS	0	WS	1
		34	0	0	WS	0	0	WS	0	WS	X
		36	0	0	WS	0	0	WS	0	WS	X
		38	0	0	WS	0	WS	1	0	WS	X
		40	0	0	WS	0	WS	WS	0	WS	X
		42	0	0	WS	0	WS	WS	WS	1	X
	6000s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	WS	0	0	WS
		30	0	0	0	0	0	WS	0	0	WS
		32	0	0	0	0	0	WS	0	WS	WS
		34	0	0	0	0	0	WS	0	WS	1
		36	0	0	WS	0	0	WS	0	WS	1
		38	0	0	WS	0	WS	WS	0	WS	2
		40	0	0	WS	0	WS	WS	0	WS	2
	6500s 1.8	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	0	0	0	WS
		30	0	0	0	0	0	WS	0	0	WS
		32	0	0	0	0	0	WS	0	WS	1
		34	0	0	0	0	0	WS	0	WS	1
		36	0	0	0	0	0	WS	0	WS	2
		38	0	0	0	0	0	WS	0	WS	2
		40	0	0	0	0	WS	WS	0	WS	2
	60s 2.0	24	0	0	0	0	0	0	0	0	WS
		26	0	0	0	0	0	0	0	0	WS
		28	0	0	0	0	0	0	0	0	WS
		30	0	0	0	0	0	WS	0	0	WS
		32	0	0	0	0	0	WS	0	0	WS
		34	0	0	0	0	0	WS	0	WS	WS
		36	0	0	0	0	0	WS	0	WS	1
		38	0	0	0	0	0	WS	0	WS	1
		40	0	0	WS	0	0	WS	0	WS	1
	90s 2.0	24	0	0	0	0	0	0	0	0	0
		26	0	0	0	0	0	0	0	0	0
		28	0	0	0	0	0	0	0	0	0
		30	0	0	0	0	0	0	0	0	0
		32	0	0	0	0	0	0	0	0	0
		34	0	0	0	0	0	0	0	0	WS
		36	0	0	0	0	0	0	0	0	WS
		38	0	0	0	0	0	0	0	0	1
		40	0	0	0	0	0	0	0	0	1

1. Cut 48" long reinforcers to match the joist depth. Use min. 23/32" plywood/OSB-rated sheathing, exposure 1, 48/24 span rated. The face grain must be horizontal (measure the 48" dimension along the long edge of the panel).
2. Fasten the reinforcer to the joist flanges with 8d nails at 6" o.c. When reinforcing both sides, stagger the nails to limit splitting the joist flanges.
3. Attach web stiffeners per intermediate Web Stiffener Nailing Schedule on page 9.
4. 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.

KEY TO TABLE

0..... No Reinforcement Required
WS..... Web Stiffeners at Support
1..... Web Stiffeners Plus One Reinforcer
2..... Web Stiffeners Plus Two Reinforcers
X..... Use Deeper Joists or Closer Spacing

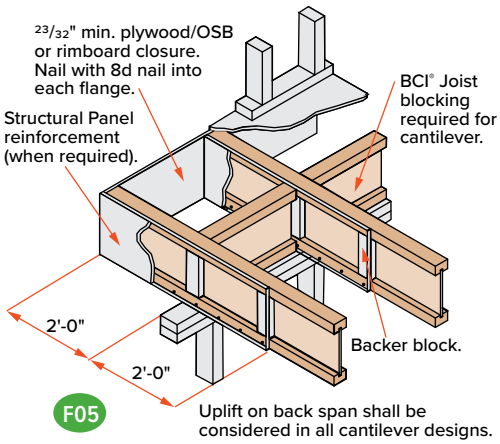
Reinforced Load Bearing Cantilever Detail



- 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.**

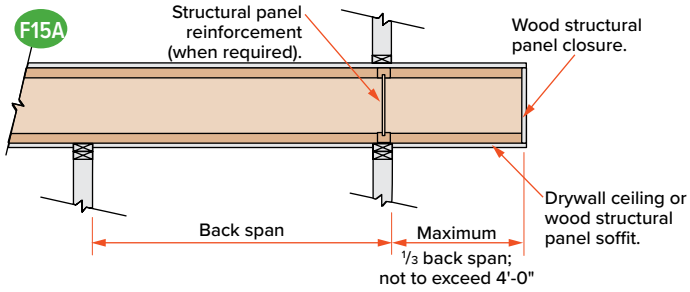
PLYWOOD / OSB REINFORCEMENT (If required per table on page 8 or BC Calc® Analysis)

- 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 a 100 PLF wall load. Additional support may be required for other loadings, see BC Calc® software.



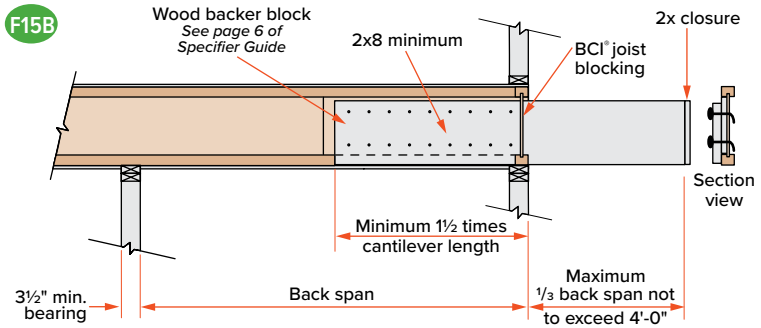
Non-Load Bearing Wall Cantilever Details

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



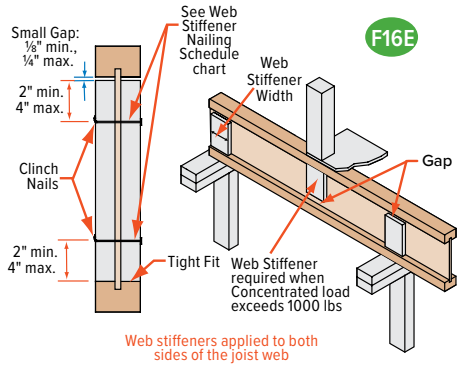
- Analyze BCI® Joist cantilever condition with BC Calc® software.

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



Web Stiffener Specifications

BCI® Joist Series	For Structural Capacity (Min. Thick)	Lateral Restraint in Hanger	Minimum Width
4500s 1.8	5/8"	5/8"	2 5/16"
5000s 1.8	5/8"	3/4"	2 5/16"
6000s 1.8	3/4"	7/8"	2 5/16"
6500s 1.8	3/4"	1" or 1 1/8"	2 5/16"
60s 2.0	3/4"	7/8"	2 5/16"
90s 2.0	2x4 lumber (vertical)		

NOTES

- Web stiffeners are optional except as noted below.
- Web stiffeners are always required in hangers that do not extend up to support the top flange of the BCI® Joist. Web stiffeners may be required with certain sloped or 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® 90s only).
- For Structural Capacity: Web stiffeners needed to increase the BCI® Joist's reaction capacity at a specific bearing location.
- Lateral Restraint in Hanger: Web stiffeners required when hanger does not laterally support the top flange (e.g., adjustable height hangers). Web stiffeners may be of multiple thickness (e.g., BCI® 6500s, double ½" panel OK).
- Web stiffeners may be used to increase allowable reaction values. See BCI® Design Properties on page 24 or the BC Calc® software.

Web Stiffener Nailing Schedule

BCI® Joist Series	Joist Depth	Bearing Location	
		End	Intermediate
4500s 1.8	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
5000s 1.8	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6000s 1.8	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
6500s 1.8	9½"	2-8d	2-8d
	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
60s 2.0	11⅞"	2-8d	3-8d
	14"	2-8d	5-8d
	16"	2-8d	6-8d
90s 2.0	11⅞"	3-16d	3-16d
	14"	5-16d	5-16d
	16"	6-16d	6-16d

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

100% Load Duration

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

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

Allowable Uniform Floor Load

(in pounds per lineal foot [PLF])

100% Load Duration

Span Length	BCI® 6000s 1.8 Series Joist 2⅝" Flange Width								BCI® 6500s 1.8 Series Joist 2⅜" Flange Width							
	9½" BCI® 6000s 1.8		11⅞" BCI® 6000s 1.8		14" BCI® 6000s 1.8		16" BCI® 6000s 1.8		9½" BCI® 6500s 1.8		11⅞" BCI® 6500s 1.8		14" BCI® 6500s 1.8		16" BCI® 6500s 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	Live Load	Total Load
6	-	320	-	333	-	346	-	353	-	320	-	333	-	346	-	353
7	-	274	-	285	-	297	-	302	-	274	-	285	-	297	-	302
8	-	240	-	250	-	260	-	265	-	240	-	250	-	260	-	265
9	-	213	-	222	-	231	-	235	-	213	-	222	-	231	-	235
10	183	192	-	200	-	208	-	212	-	192	-	200	-	208	-	212
11	141	174	-	181	-	189	-	192	153	174	-	181	-	189	-	192
12	112	160	-	166	-	173	-	176	121	160	-	166	-	173	-	176
13	89	147	144	153	-	160	-	163	97	147	-	153	-	160	-	163
14	73	129	117	142	-	148	-	151	79	137	129	142	-	148	-	151
15	60	112	97	133	-	138	-	141	65	124	106	133	-	138	-	141
16	50	98	81	125	117	130	-	132	54	109	89	125	127	130	-	132
17	42	84	68	112	99	122	-	124	46	92	75	117	107	122	-	124
18			58	100	84	115	112	117			64	110	91	115	-	117
19			50	89	72	106	96	111			54	99	78	109	104	111
20			43	81	62	96	83	106			47	89	68	104	90	106
21					54	87	72	99			41	81	59	96	78	100
22					47	79	63	90					51	88	69	96
23					42	72	56	83					45	80	60	92
24							49	76					40	74	53	84
25							44	70							47	77
26															42	72
27																
28																
29																
30																

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

Floor Load Tables

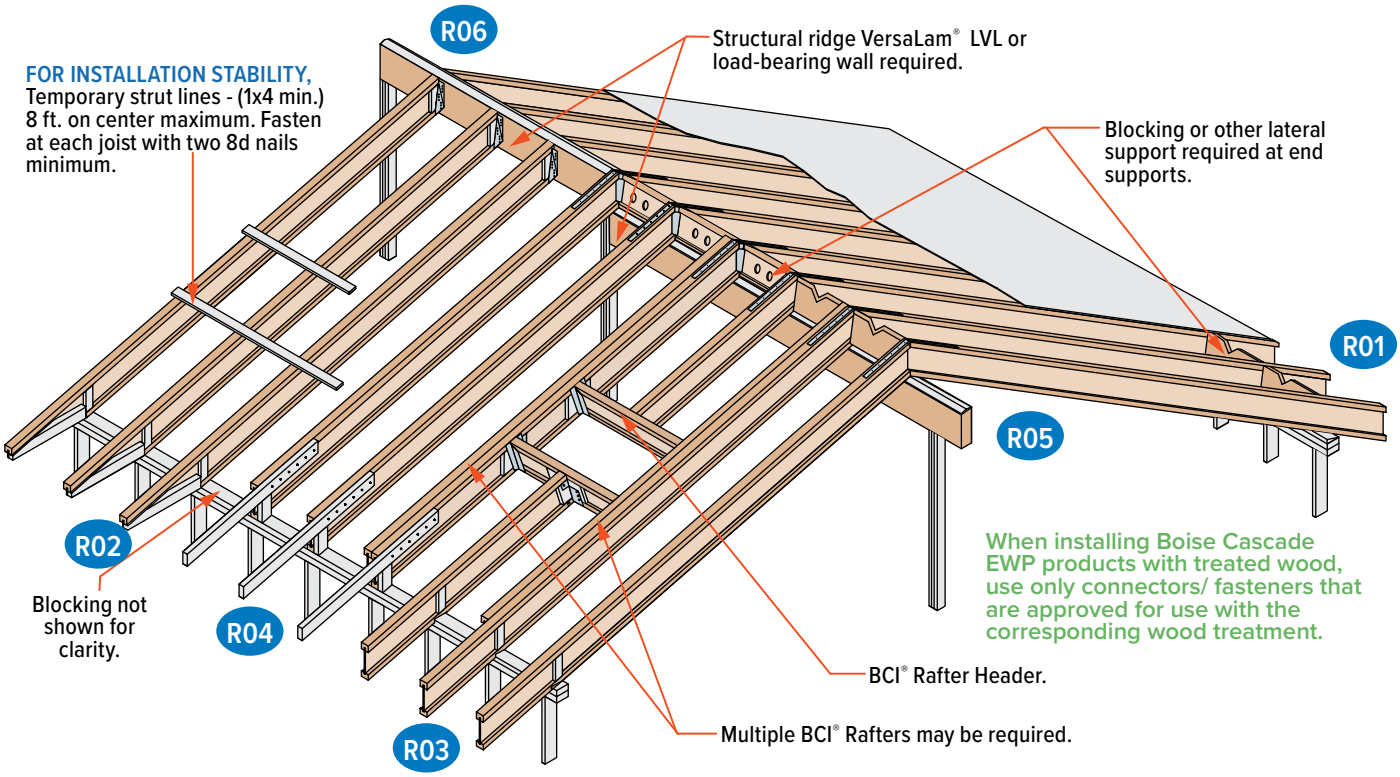
Allowable Uniform Floor Load
(in pounds per lineal foot [PLF])

100% Load Duration

Span Length	BCI® 60s 2.0 Series Joist 2⅝" Flange Width						BCI® 90s 2.0 Series Joist 3½" Flange Width					
	11⅞" BCI® 60s 2.0		14" BCI® 60s 2.0		16" BCI® 60s 2.0		11⅞" BCI® 90s 2.0		14" BCI® 90s 2.0		16" BCI® 90s 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
6	-	366	-	366	-	366	-	450	-	453	-	456
7	-	314	-	314	-	314	-	385	-	388	-	391
8	-	275	-	275	-	275	-	337	-	340	-	342
9	-	244	-	244	-	244	-	300	-	302	-	304
10	-	220	-	220	-	220	-	270	-	272	-	274
11	-	200	-	200	-	200	-	245	-	247	-	249
12	-	183	-	183	-	183	-	225	-	226	-	228
13	-	169	-	169	-	169	-	207	-	209	-	210
14	155	157	-	157	-	157	-	192	-	194	-	195
15	128	146	-	146	-	146	-	180	-	181	-	182
16	107	137	-	137	-	137	152	168	-	170	-	171
17	90	129	-	129	-	129	129	158	-	160	-	161
18	77	122	110	122	-	122	110	150	-	151	-	152
19	66	115	95	115	-	115	95	142	134	143	-	144
20	57	110	82	110	109	110	83	135	117	136	-	137
21	50	100	72	104	95	104	72	128	102	129	-	130
22	43	87	63	100	84	100	63	122	90	123	119	124
23			55	95	74	95	56	112	79	118	105	119
24			49	91	65	91	49	99	70	113	94	114
25			43	87	58	88	44	88	63	108	83	109
26					52	84			56	104	75	105
27					47	81			50	100	67	101
28					42	78			45	91	61	97
29									41	82	55	94
30											50	91

- Total Load values are limited by shear, moment, or deflection equal to L/240.
- Live Load values are limited by deflection equal to L/480. For deflection limits of L/360 and L/960, multiply the Live Load values by 1.33 and 0.50 respectively.
- Both the Total Load and Live Load columns must be checked. Where a Live Load value is not shown, the Total Load value will control.
- Table values apply to either simple or multiple span joists. Span is measured center to center of the minimum required bearing length. Analyze multiple span joists with the BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values do not consider composite action from gluing and nailing floor sheathing (composite action is considered in floor span tables on page 4).
- Total Load values assume minimum bearing lengths without web stiffeners for joist depths of 16 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

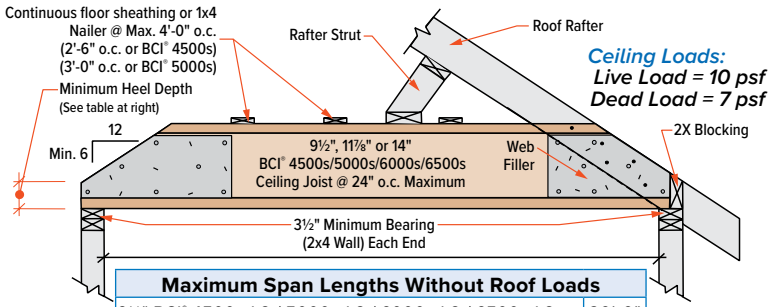
DO NOT ALLOW WORKERS ON BCI® JOISTS UNTIL ALL HANGERS, BCI® RIM JOISTS, RIM BOARDS, BCI® BLOCKING PANELS, X-BRACING AND TEMPORARY 1x4 STRUT LINES ARE INSTALLED AS SPECIFIED BELOW.

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

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

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

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



Maximum Span Lengths Without Roof Loads	
9½" BCI® 4500s 1.8 / 5000s 1.8 / 6000s 1.8 / 6500s 1.8	20'-0"
11⅞" BCI® 4500s 1.8 / 5000s 1.8 / 6000s 1.8 / 6500s 1.8	22'-6"
14" BCI® 4500s 1.8 / 5000s 1.8 / 6000s 1.8 / 6500s 1.8	24'-6"

(If roof loads present, see Notes 2 & 3 at right)

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

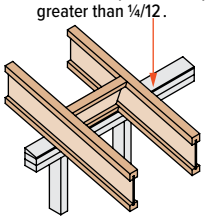
Notes:

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

Roof Framing Details

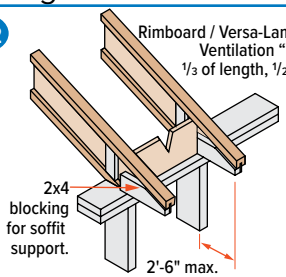
Additional roof framing details available with BC Framer® software

R01



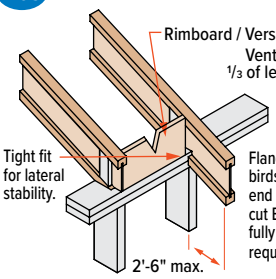
Simpson VPA or MiTek TMP connectors or equal can be used in lieu of beveled plate for slopes from 3/12 to 12/12.

R02

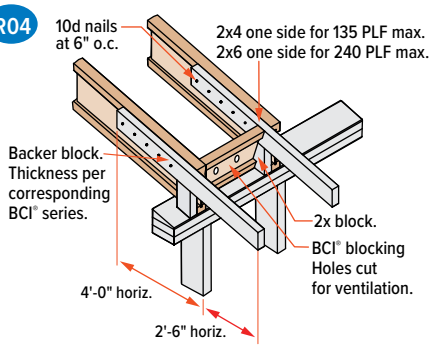


Flange of BCI® Joists may be birdsmouth cut only at the low end of the joist. Birdsmouth cut BCI® Joist flange must bear fully on plate, web stiffener required each side. Bottom flange shall be fully supported.

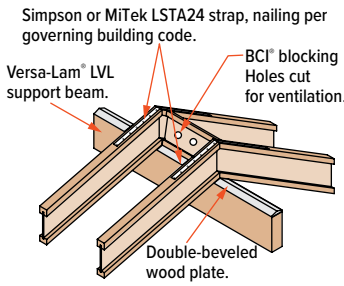
R03



R04

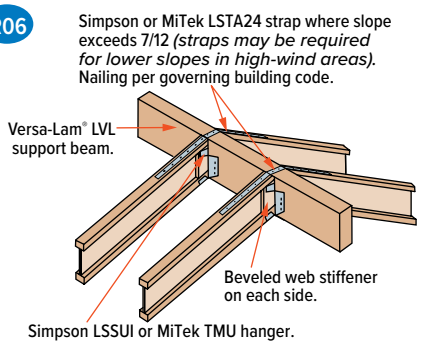


R05

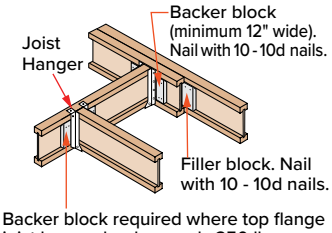


Blocking on both sides of ridge may be required for shear transfer per design professional of record.

R06

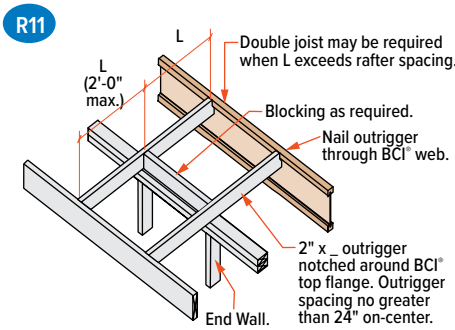


R07

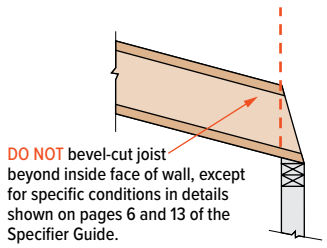


Backer block required where top flange joist hanger load exceeds 250 lbs. Install tight to top flange.

R11



DN05



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

NAILING REQUIREMENTS

- BCI® rim joist, rim board or closure panel to BCI® joist:
  - Rims or closure panel 1¼ inches thick and less: 2-8d nails, one each in the top and bottom flange.
  - BCI® 4500s/5000s rim joist: 2-10d box nails, one each in the top and bottom flange.
  - BCI® 6000s/60s rim joist: 2-16d box nails, one each in the top and bottom flange.
  - BCI® 6500s/90s rim joist: Toe-nail top flange to rim joist with 2-10d box nails, one each side of flange.
- BCI® rim joist, rim board or BCI® blocking panel to support:
  - Min. 8d nails @ 6" o.c. per IRC®.
  - Connection per design professional of record's specification for shear transfer.
- BCI® joist to support:
  - 2-8d nails, one on each side of the web, placed 1½ 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®.
  - For full lateral stability, maximum nail spacing for bracing is 18" for BCI® 4500s and 5000s, and 24" for larger BCI® joist series.
  - 14 gauge staples may be substituted for 8d nails if the staples penetrate at least 1 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
4500s 1.8	5/8" or ¾" wood panels	Two 5/8" wood panels or 2 x _
5000s 1.8	¾" or ⅞" wood panels	Two ¾" wood panels or 2 x _
6000s 1.8	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
6500s 1.8	1⅛" or two 5/8" wood panels	2 x _ + 5/8" or ¾" wood panel
60s 2.0	1⅛" or two ½" wood panels	2 x _ + 7/16" or ½" wood panel
90s 2.0	2 x _ lumber	Double 2 x _ lumber

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

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 1½ 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.

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

115% and 125% Load Duration

		Live Load [psf]	Dead Load [psf]	BCI® 4500s 1.8 Series Joist 1¾" Flange Width												BCI® 5000s 1.8 Series Joist 2" Flange Width								
				9½" BCI® 4500s 1.8			11⅞" BCI® 4500s 1.8			14" BCI® 4500s 1.8			16" BCI® 4500s 1.8			9½" BCI® 5000s 1.8			11⅞" BCI® 5000s 1.8			14" BCI® 5000s 1.8		
				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	23'-10"	22'-6"	20'-10"	28'-5"	26'-9"	24'-10"	32'-3"	30'-5"	28'-3"	35'-9"	33'-8"	31'-3"	24'-10"	23'-5"	21'-9"	29'-7"	27'-11"	25'-11"	33'-8"	31'-9"	29'-5"
		20	15	122'-7"	21'-3"	19'-7"	26'-11"	25'-3"	23'-4"	30'-7"	28'-9"	26'-6"	33'-6"	31'-10"	29'-4"	23'-6"	22'-1"	20'-5"	28'-0"	26'-4"	24'-4"	31'-10"	29'-11"	27'-7"
		20	20	21'-7"	20'-2"	18'-7"	25'-8"	24'-0"	22'-1"	29'-2"	27'-4"	25'-1"	31'-4"	30'-3"	27'-10"	22'-5"	21'-0"	19'-4"	26'-9"	25'-0"	23'-0"	30'-5"	28'-5"	26'-2"
	Snow 115%	25	10	22'-8"	21'-5"	19'-11"	26'-11"	25'-6"	23'-8"	30'-2"	29'-0"	26'-11"	32'-3"	31'-7"	29'-10"	23'-7"	22'-4"	20'-9"	28'-1"	26'-7"	24'-9"	31'-11"	30'-2"	28'-1"
		25	15	21'-7"	20'-4"	18'-10"	25'-9"	24'-2"	22'-5"	28'-2"	27'-5"	25'-6"	30'-1"	29'-4"	28'-3"	22'-6"	21'-2"	19'-7"	26'-10"	25'-3"	23'-4"	30'-3"	28'-8"	26'-7"
		30	10	21'-8"	20'-6"	19'-1"	25'-9"	24'-5"	22'-9"	28'-3"	27'-9"	25'-11"	30'-2"	29'-8"	28'-8"	22'-7"	21'-4"	19'-11"	26'-10"	25'-5"	23'-9"	30'-4"	28'-11"	27'-0"
		30	15	20'-9"	19'-7"	18'-2"	24'-5"	23'-4"	21'-8"	26'-7"	25'-11"	24'-7"	28'-5"	27'-9"	26'-10"	21'-7"	20'-5"	18'-11"	25'-9"	24'-4"	22'-7"	28'-6"	27'-8"	25'-8"
		40	10	19'-8"	18'-11"	17'-10"	23'-2"	22'-6"	21'-3"	25'-3"	24'-11"	24'-2"	27'-0"	26'-8"	26'-1"	20'-6"	19'-8"	18'-7"	24'-5"	23'-5"	22'-2"	27'-2"	26'-8"	25'-2"
		40	15	19'-5"	18'-4"	17'-1"	22'-1"	21'-8"	20'-4"	24'-1"	23'-7"	22'-11"	25'-8"	25'-2"	24'-6"	20'-2"	19'-1"	17'-10"	23'-8"	22'-9"	21'-3"	25'-10"	25'-4"	24'-1"
		50	10	18'-3"	17'-6"	16'-7"	21'-2"	20'-10"	19'-9"	23'-1"	22'-10"	22'-5"	24'-8"	24'-4"	24'-0"	19'-0"	18'-3"	17'-3"	22'-8"	21'-9"	20'-7"	24'-10"	24'-6"	23'-5"
		50	15	17'-11"	17'-4"	16'-3"	20'-4"	20'-0"	19'-4"	22'-2"	21'-9"	21'-3"	23'-8"	23'-3"	22'-9"	19'-0"	18'-1"	16'-11"	21'-10"	21'-5"	20'-2"	23'-9"	23'-4"	22'-10"
16" o.c.	Non-Snow 125%	20	10	21'-7"	20'-5"	18'-11"	25'-9"	24'-3"	22'-6"	29'-3"	27'-7"	25'-7"	31'-5"	30'-7"	28'-4"	22'-6"	21'-3"	19'-8"	26'-10"	25'-4"	23'-6"	30'-6"	28'-9"	26'-8"
		20	15	20'-6"	19'-3"	17'-9"	24'-4"	22'-11"	21'-1"	27'-2"	26'-0"	24'-0"	29'-0"	28'-2"	26'-7"	21'-4"	20'-0"	18'-6"	25'-5"	23'-10"	22'-0"	28'-11"	27'-1"	25'-0"
		20	20	19'-6"	18'-3"	16'-10"	23'-3"	21'-9"	20'-0"	25'-4"	24'-5"	22'-9"	27'-1"	26'-2"	24'-11"	20'-4"	19'-0"	17'-6"	24'-3"	22'-8"	20'-10"	27'-2"	25'-10"	23'-9"
	Snow 115%	25	10	20'-6"	19'-5"	18'-1"	24'-0"	23'-1"	21'-6"	26'-1"	25'-7"	24'-5"	27'-11"	27'-4"	26'-7"	21'-4"	20'-2"	18'-10"	25'-6"	24'-1"	22'-5"	28'-1"	27'-4"	25'-6"
		25	15	19'-7"	18'-5"	17'-1"	22'-4"	21'-9"	20'-4"	24'-4"	23'-9"	22'-11"	26'-0"	25'-4"	24'-5"	20'-5"	19'-2"	17'-9"	24'-0"	22'-10"	21'-2"	26'-2"	25'-6"	24'-1"
		30	10	19'-7"	18'-7"	17'-4"	22'-5"	22'-0"	20'-7"	24'-5"	24'-0"	23'-5"	26'-1"	25'-8"	25'-0"	20'-5"	19'-4"	18'-1"	24'-1"	23'-1"	21'-6"	26'-3"	25'-9"	24'-5"
		30	15	18'-7"	17'-9"	16'-6"	21'-1"	20'-7"	19'-7"	23'-0"	22'-5"	21'-9"	24'-7"	24'-0"	23'-3"	19'-7"	18'-6"	17'-2"	22'-8"	22'-0"	20'-5"	24'-8"	24'-1"	23'-3"
		40	10	17'-8"	17'-1"	16'-2"	20'-1"	19'-9"	19'-3"	21'-10"	21'-7"	21'-1"	23'-4"	23'-0"	22'-7"	18'-7"	17'-10"	16'-10"	21'-7"	21'-3"	20'-1"	23'-6"	23'-2"	22'-8"
		40	15	16'-10"	16'-6"	15'-6"	19'-1"	18'-8"	18'-2"	20'-10"	20'-5"	19'-10"	22'-3"	21'-10"	21'-3"	18'-1"	17'-4"	16'-1"	20'-6"	20'-1"	19'-3"	22'-4"	21'-11"	21'-4"
		50	10	16'-2"	15'-10"	15'-0"	18'-4"	18'-1"	17'-9"	19'-11"	19'-9"	19'-5"	21'-4"	21'-1"	20'-9"	17'-2"	16'-6"	15'-8"	19'-8"	19'-5"	18'-8"	21'-5"	21'-2"	20'-10"
		50	15	15'-6"	15'-3"	14'-8"	17'-7"	17'-3"	16'-10"	19'-2"	18'-10"	18'-5"	20'-5"	20'-1"	19'-8"	16'-8"	16'-4"	15'-4"	18'-10"	18'-6"	18'-1"	20'-7"	20'-2"	19'-9"
19.2" o.c.	Non-Snow 125%	20	10	20'-4"	19'-2"	17'-9"	24'-2"	22'-10"	21'-2"	26'-10"	25'-11"	24'-1"	28'-8"	28'-0"	26'-8"	21'-2"	19'-11"	18'-6"	25'-2"	23'-9"	22'-1"	28'-8"	27'-0"	25'-1"
		20	15	19'-3"	18'-1"	16'-8"	22'-9"	21'-6"	19'-10"	24'-9"	24'-0"	22'-7"	26'-5"	25'-8"	24'-8"	20'-0"	18'-10"	17'-4"	23'-10"	22'-5"	20'-8"	26'-7"	25'-6"	23'-6"
		20	20	18'-4"	17'-2"	15'-9"	21'-2"	20'-5"	18'-9"	23'-1"	22'-4"	21'-3"	24'-8"	23'-10"	22'-9"	19'-1"	17'-10"	16'-5"	22'-9"	21'-4"	19'-7"	24'-10"	23'-11"	22'-3"
	Snow 115%	25	10	19'-3"	18'-3"	17'-0"	21'-10"	21'-5"	20'-2"	23'-10"	23'-4"	22'-8"	25'-6"	24'-11"	24'-3"	20'-1"	19'-0"	17'-8"	23'-6"	22'-7"	21'-1"	25'-7"	25'-1"	23'-11"
		25	15	18'-0"	17'-4"	16'-0"	20'-5"	19'-10"	19'-1"	22'-3"	21'-8"	20'-10"	23'-9"	23'-1"	22'-4"	19'-2"	18'-0"	16'-8"	21'-11"	21'-4"	19'-11"	23'-10"	23'-3"	22'-5"
		30	10	18'-0"	17'-5"	16'-3"	20'-5"	20'-1"	19'-5"	22'-3"	21'-11"	21'-4"	23'-10"	23'-5"	22'-10"	19'-2"	18'-2"	16'-11"	22'-0"	21'-7"	20'-2"	23'-11"	23'-6"	22'-11"
		30	15	16'-11"	16'-7"	15'-6"	19'-3"	18'-9"	18'-2"	20'-11"	20'-5"	19'-10"	22'-5"	21'-10"	21'-2"	18'-3"	17'-4"	16'-1"	20'-8"	20'-2"	19'-2"	22'-6"	22'-0"	21'-3"
		40	10	16'-2"	15'-11"	15'-2"	18'-3"	18'-0"	17'-8"	19'-11"	19'-8"	19'-3"	21'-4"	21'-0"	20'-7"	17'-4"	16'-9"	15'-10"	19'-8"	19'-4"	18'-10"	21'-5"	21'-1"	20'-8"
		40	15	15'-4"	15'-0"	14'-6"	17'-5"	17'-1"	16'-7"	18'-11"	18'-7"	18'-1"	20'-3"	19'-10"	19'-4"	16'-6"	16'-2"	15'-2"	18'-8"	18'-4"	17'-10"	20'-4"	20'-0"	19'-5"
		50	10	14'-9"	14'-6"	14'-1"	16'-8"	16'-6"	16'-2"	18'-2"	18'-0"	17'-8"	19'-5"	19'-3"	18'-11"	15'-10"	15'-6"	14'-8"	17'-11"	17'-9"	17'-5"	19'-7"	19'-4"	19'-0"
		50	15	14'-1"	13'-10"	13'-7"	16'-0"	15'-9"	15'-4"	17'-5"	17'-2"	16'-9"	18'-8"	18'-4"	17'-11"	15'-2"	14'-11"	14'-4"	17'-2"	16'-11"	16'-6"	18'-9"	18'-5"	18'-0"
24" o.c.	Non-Snow 125%	20	10	18'-10"	17'-9"	16'-6"	22'-0"	21'-1"	19'-7"	24'-0"	23'-5"	22'-4"	25'-7"	25'-0"	24'-3"	19'-7"	18'-6"	17'-2"	23'-4"	22'-0"	20'-5"	25'-9"	25'-0"	23'-3"
		20	15	17'-10"	16'-9"	15'-5"	20'-3"	19'-8"	18'-4"	22'-1"	21'-5"	20'-7"	23'-8"	22'-11"	22'-0"	18'-6"	17'-5"	16'-1"	21'-10"	20'-9"	19'-2"	23'-9"	23'-1"	21'-9"
		20	20	16'-8"	15'-11"	14'-7"	18'-11"	18'-3"	17'-5"	20'-8"	19'-11"	19'-0"	22'-1"	21'-3"	20'-4"	17'-8"	16'-7"	15'-3"	20'-4"	19'-8"	18'-2"	22'-2"	21'-5"	20'-5"
	Snow 115%	25	10	17'-3"	16'-10"	15'-9"	19'-6"	19'-2"	18'-7"	21'-3"	20'-10"	20'-3"	22'-9"	22'-3"	21'-8"	18'-6"	17'-7"	16'-4"	21'-0"	20'-7"	19'-6"	22'-10"	22'-5"	21'-9"
		25	15	16'-1"	15'-7"	14'-10"	18'-2"	17'-9"	17'-1"	19'-10"	19'-4"	18'-8"	21'-3"	20'-8"	19'-11"	17'-3"	16'-8"	15'-5"	19'-7"	19'-1"	18'-4"	21'-4"	20'-9"	20'-0"
		30	10	16'-1"	15'-10"	15'-1"	18'-3"	17'-11"	17'-6"	19'-11"	19'-7"	19'-1"	21'-3"	20'-11"	20'-5"	17'-4"	16'-10"	15'-8"	19'-7"	19'-3"	18'-9"	21'-5"	21'-0"	20'-6"
		30	15	15'-2"	14'-9"	14'-4"	17'-2"	16'-9"	16'-3"	18'-9"	18'-3"	17'-8"	20'-0"	19'-6"	18'-11"	16'-3"	15'-11"	14'-11"	18'-5"	18'-0"	17'-5"	20'-1"	19'-8"	19'-0"
		40	10	14'-5"	14'-2"	13'-11"	16'-4"	16'-1"	15'-9"	17'-10"	17'-7"	17'-2"	19'-0"	18'-9"	18'-5"	15'-6"	15'-3"	14'-7"	17'-7"	17'-4"	16'-11"	19'-2"	18'-10"	18'-6"
		40	15	13'-8"	13'-5"	13'-1"	15'-6"	15'-3"	14'-10"	16'-11"	16'-7"	16'-2"	18'-1"	17'-9"	17'-3"	14'-9"	14'-5"	14'-0"	16'-8"	16'-4"	15'-11"	18'-2"	17'-10"	17'-4"
		50	10	13'-2"	13'-0"	12'-9"	14'-11"	14'-9"	14'-6"	16'-3"	16'-1"	15'-9"	17'-4"	17'-2"	16'-10"	14'-2"	13'-11"	13'-7"	16'-0"	15'-10"	15'-7"	17'-5"	17'-2"	16'-7"
		50	15	12'-7"	12'-4"	12'-1"	14'-3"	14'-0"	13'-9"	15'-7"	15'-4"	14'-11"	16'-6"	16'-0"	15'-3"	13'-6"	13'-4"	13'-0"	15'-4"	14'-11"	14'-3"	16'-2"	15'-8"	14'-11"

- Table values are limited by shear, moment, total load deflection equal to L/180 and live load deflection equal to L/240. Check the local building code for other deflection 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 ¼" 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® 6000s 1.8 Series Joist 2 5/16" Flange Width											
				9½" BCI® 6000s 1.8			11⅞" BCI® 6000s 1.8			14" BCI® 6000s 1.8			16" BCI® 6000s 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'-0"	24'-6"	22'-9"	30'-11"	29'-2"	27'-0"	35'-2"	33'-2"	30'-9"	38'-10"	36'-7"	34'-0"
		20	15	24'-7"	23'-1"	21'-4"	29'-3"	27'-6"	25'-4"	33'-3"	31'-3"	28'-10"	36'-9"	34'-6"	31'-10"
		20	20	23'-6"	22'-0"	20'-2"	27'-11"	26'-1"	24'-0"	31'-9"	29'-9"	27'-4"	35'-1"	32'-10"	30'-2"
	Snow 115%	25	10	24'-8"	23'-4"	21'-8"	29'-4"	27'-9"	25'-10"	33'-4"	31'-6"	29'-4"	36'-10"	34'-10"	32'-5"
		25	15	23'-6"	22'-2"	20'-6"	28'-0"	26'-4"	24'-5"	31'-10"	29'-11"	27'-9"	34'-11"	33'-1"	30'-8"
		30	10	23'-7"	22'-4"	20'-10"	28'-0"	26'-7"	24'-9"	31'-11"	30'-2"	28'-2"	35'-1"	33'-5"	31'-2"
		30	15	22'-7"	21'-4"	19'-9"	26'-11"	25'-4"	23'-6"	30'-7"	28'-10"	26'-9"	33'-0"	31'-11"	29'-7"
		40	10	21'-5"	20'-7"	19'-5"	25'-6"	24'-6"	23'-1"	29'-0"	27'-10"	26'-3"	31'-4"	30'-9"	29'-0"
		40	15	21'-1"	20'-0"	18'-7"	25'-1"	23'-9"	22'-2"	27'-11"	27'-1"	25'-2"	29'-10"	29'-3"	27'-10"
		50	10	19'-10"	19'-1"	18'-1"	23'-7"	22'-8"	21'-6"	26'-9"	25'-9"	24'-6"	28'-8"	28'-3"	27'-1"
		50	15	19'-10"	18'-11"	17'-8"	23'-7"	22'-6"	21'-0"	25'-8"	25'-3"	23'-11"	27'-5"	27'-0"	26'-5"
16" o.c.	Non-Snow 125%	20	10	23'-6"	22'-2"	20'-7"	28'-0"	26'-5"	24'-6"	31'-10"	30'-0"	27'-10"	35'-2"	33'-2"	30'-10"
		20	15	22'-3"	20'-11"	19'-4"	26'-6"	24'-11"	23'-0"	30'-2"	28'-4"	26'-2"	33'-4"	31'-4"	28'-11"
		20	20	21'-3"	19'-11"	18'-4"	25'-3"	23'-8"	21'-9"	28'-9"	26'-11"	24'-9"	31'-5"	29'-9"	27'-5"
	Snow 115%	25	10	22'-4"	21'-1"	19'-8"	26'-7"	25'-1"	23'-5"	30'-3"	28'-7"	26'-7"	32'-5"	31'-7"	29'-5"
		25	15	21'-4"	20'-1"	18'-7"	25'-4"	23'-10"	22'-1"	28'-3"	27'-2"	25'-2"	30'-3"	29'-5"	27'-9"
		30	10	21'-4"	20'-3"	18'-10"	25'-5"	24'-1"	22'-5"	28'-4"	27'-4"	25'-6"	30'-4"	29'-9"	28'-3"
		30	15	20'-6"	19'-4"	17'-11"	24'-4"	23'-0"	21'-4"	26'-8"	26'-0"	24'-3"	28'-6"	27'-10"	26'-10"
		40	10	19'-5"	18'-7"	17'-7"	23'-1"	22'-2"	20'-11"	25'-5"	25'-0"	23'-10"	27'-2"	26'-9"	26'-2"
		40	15	19'-1"	18'-1"	16'-10"	22'-2"	21'-6"	20'-1"	24'-2"	23'-8"	22'-10"	25'-10"	25'-4"	24'-8"
		50	10	18'-0"	17'-3"	16'-4"	21'-3"	20'-6"	19'-6"	23'-2"	22'-11"	22'-2"	24'-9"	24'-6"	24'-1"
		50	15	17'-11"	17'-1"	16'-0"	20'-4"	20'-0"	19'-0"	22'-2"	21'-10"	21'-4"	23'-9"	23'-4"	22'-10"
19.2" o.c.	Non-Snow 125%	20	10	22'-1"	20'-10"	19'-4"	26'-3"	24'-10"	23'-0"	29'-11"	28'-3"	26'-2"	33'-1"	31'-2"	28'-11"
		20	15	20'-11"	19'-8"	18'-2"	24'-11"	23'-5"	21'-7"	28'-4"	26'-7"	24'-7"	30'-8"	29'-5"	27'-2"
		20	20	19'-11"	18'-8"	17'-2"	23'-9"	22'-3"	20'-5"	26'-10"	25'-4"	23'-3"	28'-8"	27'-8"	25'-9"
	Snow 115%	25	10	21'-0"	19'-10"	18'-6"	24'-11"	23'-7"	22'-0"	27'-8"	26'-10"	25'-0"	29'-7"	28'-11"	27'-8"
		25	15	20'-0"	18'-10"	17'-5"	23'-8"	22'-5"	20'-9"	25'-9"	25'-1"	23'-7"	27'-7"	26'-10"	25'-11"
		30	10	20'-1"	19'-0"	17'-9"	23'-9"	22'-7"	21'-1"	25'-10"	25'-5"	24'-0"	27'-8"	27'-2"	26'-6"
		30	15	19'-3"	18'-2"	16'-10"	22'-4"	21'-7"	20'-0"	24'-4"	23'-9"	22'-10"	26'-0"	25'-5"	24'-7"
		40	10	18'-3"	17'-6"	16'-6"	21'-3"	20'-10"	19'-8"	23'-2"	22'-10"	22'-4"	24'-9"	24'-5"	23'-11"
		40	15	17'-10"	17'-0"	15'-10"	20'-2"	19'-10"	18'-10"	22'-0"	21'-7"	21'-0"	23'-6"	23'-1"	22'-6"
		50	10	16'-10"	16'-2"	15'-4"	19'-5"	19'-2"	18'-3"	21'-1"	20'-10"	20'-6"	22'-7"	22'-4"	21'-11"
		50	15	16'-4"	16'-1"	15'-0"	18'-7"	18'-3"	17'-10"	20'-3"	19'-11"	19'-5"	21'-8"	21'-3"	20'-10"
24" o.c.	Non-Snow 125%	20	10	20'-6"	19'-4"	17'-11"	24'-4"	23'-0"	21'-4"	27'-9"	26'-2"	24'-3"	29'-9"	28'-11"	26'-10"
		20	15	19'-4"	18'-2"	16'-10"	23'-0"	21'-8"	20'-0"	25'-8"	24'-8"	22'-9"	27'-5"	26'-7"	25'-2"
		20	20	18'-6"	17'-3"	15'-11"	22'-0"	20'-7"	18'-11"	23'-11"	23'-1"	21'-7"	25'-7"	24'-9"	23'-7"
	Snow 115%	25	10	19'-5"	18'-4"	17'-1"	22'-8"	21'-10"	20'-4"	24'-8"	24'-2"	23'-2"	26'-5"	25'-10"	25'-2"
		25	15	18'-6"	17'-5"	16'-2"	21'-2"	20'-7"	19'-3"	23'-0"	22'-5"	21'-8"	24'-8"	24'-0"	23'-2"
		30	10	18'-7"	17'-7"	16'-5"	21'-2"	20'-10"	19'-6"	23'-1"	22'-8"	22'-2"	24'-9"	24'-3"	23'-8"
		30	15	17'-7"	16'-9"	15'-7"	19'-11"	19'-6"	18'-7"	21'-9"	21'-3"	20'-6"	23'-3"	22'-8"	21'-11"
		40	10	16'-9"	16'-2"	15'-3"	19'-0"	18'-8"	18'-2"	20'-8"	20'-4"	20'-0"	22'-1"	21'-9"	21'-4"
		40	15	15'-11"	15'-7"	14'-8"	18'-0"	17'-8"	17'-2"	19'-8"	19'-3"	18'-9"	21'-0"	20'-7"	19'-8"
		50	10	15'-3"	14'-11"	14'-3"	17'-4"	17'-1"	16'-10"	18'-10"	18'-8"	18'-4"	19'-10"	19'-5"	18'-9"
		50	15	14'-7"	14'-4"	13'-11"	16'-7"	16'-4"	15'-11"	17'-11"	17'-4"	16'-6"	18'-3"	17'-8"	16'-10"

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

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

115% and 125% Load Duration

				BCI® 6500s 1.8 Series Joist 2 9/16" Flange Width											
				9½" BCI® 6500s 1.8			11⅞" BCI® 6500s 1.8			14" BCI® 6500s 1.8			16" BCI® 6500s 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'-10"	25'-3"	23'-6"	31'-10"	30'-0"	27'-10"	36'-2"	34'-1"	31'-8"	40'-0"	37'-8"	35'-0"
		20	15	25'-5"	23'-10"	22'-0"	30'-2"	28'-4"	26'-1"	34'-3"	32'-2"	29'-8"	37'-10"	35'-7"	32'-10"
		20	20	24'-3"	22'-8"	20'-10"	28'-9"	26'-11"	24'-9"	32'-8"	30'-7"	28'-2"	36'-1"	33'-10"	31'-1"
	Snow 115%	25	10	25'-5"	24'-1"	22'-5"	30'-3"	28'-7"	26'-7"	34'-4"	32'-6"	30'-3"	37'-11"	35'-10"	33'-5"
		25	15	24'-3"	22'-10"	21'-2"	28'-10"	27'-2"	25'-1"	32'-9"	30'-10"	28'-7"	36'-2"	34'-1"	31'-7"
		30	10	24'-4"	23'-0"	21'-6"	28'-11"	27'-4"	25'-6"	32'-10"	31'-1"	29'-0"	36'-3"	34'-4"	32'-1"
		30	15	23'-4"	22'-0"	20'-5"	27'-8"	26'-2"	24'-3"	31'-6"	29'-9"	27'-7"	34'-8"	32'-10"	30'-6"
		40	10	22'-2"	21'-3"	20'-0"	26'-4"	25'-3"	23'-10"	29'-11"	28'-8"	27'-1"	33'-0"	31'-8"	29'-11"
		40	15	21'-9"	20'-7"	19'-3"	25'-11"	24'-6"	22'-10"	29'-5"	27'-10"	25'-11"	31'-5"	30'-9"	28'-8"
		50	10	20'-6"	19'-8"	18'-8"	24'-4"	23'-4"	22'-2"	27'-8"	26'-7"	25'-2"	30'-2"	29'-4"	27'-10"
		50	15	20'-6"	19'-6"	18'-3"	24'-4"	23'-2"	21'-8"	27'-0"	26'-4"	24'-8"	28'-11"	28'-5"	27'-3"
16" o.c.	Non-Snow 125%	20	10	24'-4"	22'-11"	21'-3"	28'-10"	27'-2"	25'-3"	32'-10"	30'-11"	28'-8"	36'-3"	34'-2"	31'-9"
		20	15	23'-0"	21'-7"	19'-11"	27'-4"	25'-8"	23'-8"	31'-1"	29'-2"	26'-11"	34'-4"	32'-3"	29'-9"
		20	20	21'-11"	20'-6"	18'-11"	26'-1"	24'-5"	22'-5"	29'-8"	27'-9"	25'-6"	32'-9"	30'-8"	28'-2"
	Snow 115%	25	10	23'-1"	21'-10"	20'-4"	27'-5"	25'-11"	24'-1"	31'-2"	29'-5"	27'-5"	34'-1"	32'-6"	30'-3"
		25	15	22'-0"	20'-8"	19'-2"	26'-1"	24'-7"	22'-9"	29'-8"	27'-11"	25'-11"	31'-10"	30'-11"	28'-7"
		30	10	22'-0"	20'-10"	19'-6"	26'-2"	24'-9"	23'-1"	29'-9"	28'-2"	26'-4"	31'-11"	31'-2"	29'-1"
		30	15	21'-1"	19'-11"	18'-6"	25'-1"	23'-8"	22'-0"	28'-1"	26'-11"	25'-0"	30'-0"	29'-4"	27'-7"
		40	10	20'-0"	19'-3"	18'-2"	23'-10"	22'-10"	21'-7"	26'-9"	26'-0"	24'-6"	28'-7"	28'-2"	27'-1"
		40	15	19'-9"	18'-8"	17'-5"	23'-4"	22'-2"	20'-8"	25'-5"	24'-11"	23'-6"	27'-2"	26'-8"	25'-11"
		50	10	18'-6"	17'-9"	16'-11"	22'-1"	21'-2"	20'-1"	24'-5"	24'-1"	22'-10"	26'-1"	25'-9"	25'-3"
		50	15	18'-6"	17'-8"	16'-6"	21'-5"	21'-0"	19'-8"	23'-5"	23'-0"	22'-4"	25'-0"	24'-7"	24'-0"
19.2" o.c.	Non-Snow 125%	20	10	22'-10"	21'-6"	20'-0"	27'-1"	25'-7"	23'-9"	30'-10"	29'-1"	27'-0"	34'-0"	32'-1"	29'-10"
		20	15	21'-7"	20'-3"	18'-9"	25'-8"	24'-1"	22'-3"	29'-2"	27'-5"	25'-4"	32'-3"	30'-3"	27'-11"
		20	20	20'-7"	19'-3"	17'-9"	24'-6"	22'-11"	21'-1"	27'-10"	26'-1"	24'-0"	30'-2"	28'-9"	26'-6"
	Snow 115%	25	10	21'-8"	20'-6"	19'-1"	25'-9"	24'-4"	22'-8"	29'-1"	27'-8"	25'-9"	31'-1"	30'-6"	28'-5"
		25	15	20'-8"	19'-5"	18'-0"	24'-6"	23'-1"	21'-5"	27'-2"	26'-3"	24'-4"	29'-0"	28'-3"	26'-11"
		30	10	20'-8"	19'-7"	18'-3"	24'-7"	23'-3"	21'-9"	27'-3"	26'-6"	24'-8"	29'-1"	28'-7"	27'-4"
		30	15	19'-10"	18'-9"	17'-5"	23'-6"	22'-3"	20'-8"	25'-7"	25'-0"	23'-6"	27'-5"	26'-9"	25'-11"
		40	10	18'-10"	18'-1"	17'-1"	22'-4"	21'-5"	20'-3"	24'-4"	24'-0"	23'-0"	26'-1"	25'-8"	25'-2"
		40	15	18'-6"	17'-6"	16'-4"	21'-3"	20'-10"	19'-5"	23'-2"	22'-9"	22'-1"	24'-9"	24'-4"	23'-8"
		50	10	17'-5"	16'-8"	15'-10"	20'-5"	19'-10"	18'-10"	22'-3"	22'-0"	21'-5"	23'-9"	23'-6"	23'-1"
		50	15	17'-3"	16'-7"	15'-6"	19'-7"	19'-3"	18'-5"	21'-4"	21'-0"	20'-6"	22'-10"	22'-2"	21'-2"
24" o.c.	Non-Snow 125%	20	10	21'-1"	19'-11"	18'-6"	25'-1"	23'-8"	22'-0"	28'-6"	26'-11"	25'-0"	31'-4"	29'-9"	27'-7"
		20	15	20'-0"	18'-9"	17'-4"	23'-9"	22'-4"	20'-7"	27'-0"	25'-5"	23'-5"	28'-11"	28'-0"	25'-11"
		20	20	19'-1"	17'-10"	16'-5"	22'-8"	21'-3"	19'-6"	25'-3"	24'-2"	22'-2"	26'-11"	26'-0"	24'-6"
	Snow 115%	25	10	20'-0"	18'-11"	17'-8"	23'-10"	22'-6"	21'-0"	26'-0"	25'-6"	23'-10"	27'-10"	27'-3"	26'-4"
		25	15	19'-1"	18'-0"	16'-8"	22'-3"	21'-5"	19'-10"	24'-3"	23'-7"	22'-6"	25'-11"	25'-3"	24'-4"
		30	10	19'-2"	18'-2"	16'-11"	22'-4"	21'-7"	20'-1"	24'-4"	23'-11"	22'-11"	26'-0"	25'-7"	24'-11"
		30	15	18'-4"	17'-4"	16'-1"	21'-0"	20'-6"	19'-1"	22'-10"	22'-4"	21'-7"	24'-5"	23'-11"	23'-1"
		40	10	17'-5"	16'-8"	15'-9"	20'-0"	19'-8"	18'-9"	21'-9"	21'-5"	21'-0"	23'-3"	22'-11"	22'-3"
		40	15	16'-9"	16'-2"	15'-1"	19'-0"	18'-7"	18'-0"	20'-8"	20'-4"	19'-3"	21'-7"	20'-9"	19'-8"
		50	10	16'-1"	15'-5"	14'-8"	18'-3"	18'-0"	17'-5"	19'-6"	19'-0"	18'-5"	19'-10"	19'-5"	18'-9"
		50	15	15'-5"	15'-2"	14'-4"	17'-3"	16'-8"	15'-11"	17'-11"	17'-4"	16'-6"	18'-3"	17'-8"	16'-10"

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

Roof Span Tables

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

115% and 125% Load Duration

				BCI® 60s 2.0 Series Joist 2⁵/₁₆" Flange Width									BCI® 90s 2.0 Series Joist 3½" Flange Width								
				11⅞" BCI® 60s 2.0			14" BCI® 60s 2.0			16" BCI® 60s 2.0			11⅞" BCI® 90s 2.0			14" BCI® 90s 2.0			16" BCI® 90s 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	4/12 or Less	4/12 to 8/12	8/12 to 12/12	4/12 or Less	4/12 to 8/12	8/12 to 12/12
12" o.c.	Non-Snow 125%	20	10	34'-1"	32'-2"	29'-10"	38'-9"	36'-7"	33'-11"	42'-11"	40'-6"	37'-7"	39'-0"	36'-10"	34'-2"	44'-3"	41'-9"	38'-9"	49'-0"	46'-3"	42'-11"
		20	15	32'-4"	30'-4"	28'-0"	36'-9"	34'-6"	31'-10"	40'-8"	38'-3"	35'-3"	37'-0"	34'-9"	32'-1"	41'-11"	39'-4"	36'-4"	46'-5"	43'-7"	40'-3"
		20	20	30'-10"	28'-10"	26'-6"	35'-1"	32'-10"	30'-2"	38'-10"	36'-4"	33'-5"	35'-3"	33'-0"	30'-4"	39'-11"	37'-5"	34'-5"	44'-3"	41'-5"	38'-1"
	Snow 115%	25	10	32'-5"	30'-7"	28'-6"	36'-10"	34'-10"	32'-5"	40'-10"	38'-7"	35'-11"	37'-1"	35'-0"	32'-7"	42'-0"	39'-8"	36'-11"	46'-6"	44'-0"	40'-11"
		25	15	30'-11"	29'-1"	26'-11"	35'-2"	33'-1"	30'-7"	38'-11"	36'-8"	33'-11"	35'-4"	33'-3"	30'-10"	40'-1"	37'-9"	34'-11"	44'-4"	41'-9"	38'-8"
		30	10	31'-0"	29'-4"	27'-4"	35'-3"	33'-4"	31'-1"	39'-0"	36'-11"	34'-5"	35'-5"	33'-7"	31'-4"	40'-2"	38'-0"	35'-6"	44'-6"	42'-1"	39'-4"
		30	15	29'-8"	28'-0"	26'-0"	33'-9"	31'-10"	29'-7"	37'-5"	35'-3"	32'-9"	34'-0"	32'-1"	29'-9"	38'-6"	36'-4"	33'-9"	42'-8"	40'-3"	37'-4"
		40	10	28'-2"	27'-0"	25'-6"	32'-1"	30'-9"	29'-0"	35'-6"	34'-1"	32'-2"	32'-3"	30'-11"	29'-2"	36'-6"	35'-0"	33'-1"	40'-6"	38'-10"	36'-8"
		40	15	27'-9"	26'-3"	24'-6"	31'-7"	29'-10"	27'-10"	34'-11"	33'-1"	30'-10"	31'-9"	30'-0"	28'-0"	36'-0"	34'-0"	31'-9"	39'-10"	37'-9"	35'-2"
		50	10	26'-1"	25'-0"	23'-9"	29'-8"	28'-6"	27'-0"	32'-11"	31'-6"	29'-11"	29'-10"	28'-8"	27'-2"	33'-10"	32'-5"	30'-10"	37'-6"	35'-11"	34'-2"
		50	15	26'-1"	24'-10"	23'-3"	29'-8"	28'-3"	26'-5"	32'-11"	31'-4"	29'-3"	29'-10"	28'-5"	26'-7"	33'-10"	32'-3"	30'-1"	37'-6"	35'-8"	33'-5"
16" o.c.	Non-Snow 125%	20	10	30'-11"	29'-2"	27'-1"	35'-2"	33'-2"	30'-9"	38'-11"	36'-9"	34'-1"	35'-4"	33'-4"	31'-0"	40'-1"	37'-10"	35'-1"	44'-5"	41'-11"	38'-11"
		20	15	29'-3"	27'-6"	25'-5"	33'-4"	31'-3"	28'-10"	36'-11"	34'-8"	32'-0"	33'-6"	31'-6"	29'-1"	37'-11"	35'-8"	32'-11"	42'-0"	39'-6"	36'-6"
		20	20	27'-11"	26'-2"	24'-1"	31'-9"	29'-9"	27'-4"	35'-2"	32'-11"	30'-4"	31'-11"	29'-11"	27'-6"	36'-2"	33'-11"	31'-2"	40'-1"	37'-7"	34'-7"
	Snow 115%	25	10	29'-4"	27'-9"	25'-10"	33'-5"	31'-7"	29'-5"	37'-0"	34'-11"	32'-7"	33'-7"	31'-9"	29'-7"	38'-1"	36'-0"	33'-6"	42'-2"	39'-10"	37'-1"
		25	15	28'-0"	26'-4"	24'-5"	31'-10"	30'-0"	27'-9"	35'-3"	33'-2"	30'-9"	32'-0"	30'-2"	27'-11"	36'-3"	34'-2"	31'-8"	40'-2"	37'-10"	35'-1"
		30	10	28'-1"	26'-7"	24'-10"	31'-11"	30'-3"	28'-2"	35'-4"	33'-6"	31'-3"	32'-1"	30'-5"	28'-4"	36'-4"	34'-5"	32'-2"	40'-3"	38'-2"	35'-8"
		30	15	26'-11"	25'-5"	23'-7"	30'-7"	28'-10"	26'-10"	33'-11"	32'-0"	29'-8"	30'-9"	29'-0"	27'-0"	34'-10"	32'-11"	30'-7"	38'-7"	36'-5"	33'-10"
		40	10	25'-6"	24'-6"	23'-1"	29'-0"	27'-10"	26'-4"	32'-2"	30'-10"	29'-2"	29'-2"	28'-0"	26'-5"	33'-1"	31'-9"	30'-0"	36'-8"	35'-2"	33'-3"
		40	15	25'-1"	23'-9"	22'-2"	28'-7"	27'-1"	25'-3"	31'-8"	30'-0"	27'-11"	28'-9"	27'-2"	25'-4"	32'-7"	30'-10"	28'-9"	36'-1"	34'-2"	31'-10"
		50	10	23'-7"	22'-8"	21'-6"	26'-10"	25'-9"	24'-6"	29'-9"	28'-7"	27'-1"	27'-0"	25'-11"	24'-7"	30'-7"	29'-5"	27'-11"	33'-11"	32'-7"	30'-11"
		50	15	23'-7"	22'-6"	21'-0"	26'-10"	25'-7"	23'-11"	28'-7"	27'-8"	26'-5"	27'-0"	25'-9"	24'-1"	30'-7"	29'-2"	27'-3"	33'-11"	32'-4"	30'-3"
19.2" o.c.	Non-Snow 125%	20	10	29'-1"	27'-5"	25'-5"	33'-0"	31'-2"	28'-11"	36'-7"	34'-6"	32'-0"	33'-3"	31'-4"	29'-1"	37'-8"	35'-6"	33'-0"	41'-8"	39'-4"	36'-7"
		20	15	27'-6"	25'-10"	23'-10"	31'-3"	29'-5"	27'-1"	34'-8"	32'-7"	30'-1"	31'-5"	29'-7"	27'-3"	35'-8"	33'-6"	30'-11"	39'-6"	37'-1"	34'-3"
		20	20	26'-3"	24'-7"	22'-7"	29'-10"	27'-11"	25'-8"	33'-0"	30'-11"	28'-6"	30'-0"	28'-1"	25'-10"	34'-0"	31'-10"	29'-3"	37'-8"	35'-3"	32'-5"
	Snow 115%	25	10	27'-7"	26'-1"	24'-3"	31'-4"	29'-8"	27'-7"	34'-9"	32'-10"	30'-7"	31'-6"	29'-10"	27'-9"	35'-9"	33'-10"	31'-6"	39'-7"	37'-5"	34'-11"
		25	15	26'-3"	24'-9"	22'-11"	29'-11"	28'-2"	26'-1"	33'-1"	31'-2"	28'-11"	30'-1"	28'-4"	26'-3"	34'-1"	32'-1"	29'-9"	37'-9"	35'-7"	32'-11"
		30	10	26'-4"	25'-0"	23'-4"	30'-0"	28'-5"	26'-6"	33'-2"	31'-5"	29'-4"	30'-1"	28'-7"	26'-8"	34'-2"	32'-4"	30'-2"	37'-10"	35'-10"	33'-6"
		30	15	25'-3"	23'-10"	22'-2"	28'-9"	27'-1"	25'-2"	31'-10"	30'-0"	27'-11"	28'-10"	27'-3"	25'-4"	32'-9"	30'-11"	28'-8"	36'-3"	34'-3"	31'-10"
		40	10	24'-0"	23'-0"	21'-9"	27'-3"	26'-2"	24'-8"	30'-2"	29'-0"	27'-4"	27'-5"	26'-3"	24'-10"	31'-0"	29'-10"	28'-2"	34'-5"	33'-0"	31'-2"
		40	15	23'-7"	22'-4"	20'-10"	26'-10"	25'-5"	23'-8"	28'-1"	27'-0"	25'-7"	26'-11"	25'-6"	23'-10"	30'-7"	28'-11"	27'-0"	33'-10"	32'-1"	29'-11"
		50	10	22'-2"	21'-3"	20'-3"	25'-3"	24'-2"	23'-0"	25'-10"	25'-3"	24'-5"	25'-4"	24'-4"	23'-1"	28'-8"	27'-7"	26'-2"	31'-10"	30'-7"	29'-1"
		50	15	22'-2"	21'-2"	19'-9"	23'-9"	23'-0"	21'-11"	23'-9"	23'-0"	21'-11"	25'-4"	24'-2"	22'-7"	28'-8"	27'-5"	25'-7"	29'-8"	28'-8"	27'-5"
24" o.c.	Non-Snow 125%	20	10	26'-11"	25'-5"	23'-7"	30'-7"	28'-10"	26'-10"	33'-11"	32'-0"	29'-8"	30'-9"	29'-0"	27'-0"	34'-10"	32'-11"	30'-7"	38'-7"	36'-5"	33'-10"
		20	15	25'-6"	23'-11"	22'-1"	28'-11"	27'-2"	25'-2"	32'-1"	30'-2"	27'-10"	29'-1"	27'-4"	25'-3"	33'-0"	31'-0"	28'-8"	36'-7"	34'-4"	31'-9"
		20	20	24'-3"	22'-9"	20'-11"	27'-7"	25'-10"	23'-10"	30'-7"	28'-8"	26'-4"	27'-9"	26'-0"	23'-11"	31'-5"	29'-6"	27'-1"	34'-10"	32'-8"	30'-1"
	Snow 115%	25	10	25'-6"	24'-2"	22'-6"	29'-0"	27'-6"	25'-7"	32'-2"	30'-5"	28'-4"	29'-2"	27'-7"	25'-9"	33'-1"	31'-4"	29'-2"	36'-8"	34'-8"	32'-4"
		25	15	24'-4"	22'-11"	21'-3"	27'-8"	26'-1"	24'-2"	30'-8"	28'-11"	26'-9"	27'-10"	26'-3"	24'-4"	31'-6"	29'-9"	27'-6"	34'-11"	32'-11"	30'-6"
		30	10	24'-5"	23'-1"	21'-7"	27'-9"	26'-3"	24'-6"	30'-9"	29'-1"	27'-2"	27'-11"	26'-5"	24'-8"	31'-7"	29'-11"	28'-0"	35'-0"	33'-2"	31'-0"
		30	15	23'-4"	22'-1"	20'-6"	26'-7"	25'-1"	23'-4"	27'-4"	26'-1"	24'-5"	26'-9"	25'-3"	23'-5"	30'-3"	28'-7"	26'-7"	33'-7"	31'-8"	29'-5"
		40	10	22'-2"	21'-3"	20'-1"	24'-9"	24'-1"	22'-10"	24'-9"	24'-1"	23'-1"	25'-4"	24'-4"	23'-0"	28'-8"	27'-7"	26'-1"	30'-11"	30'-0"	28'-10"
		40	15	21'-10"	20'-8"	19'-3"	22'-5"	21'-6"	20'-5"	22'-5"	21'-6"	20'-5"	24'-11"	23'-7"	22'-0"	27'-9"	26'-8"	25'-0"	28'-0"	26'-11"	25'-6"
		50	10	20'-6"	19'-8"	18'-9"	20'-8"	20'-2"	19'-6"	20'-8"	20'-2"	19'-6"	23'-5"	22'-6"	21'-5"	25'-7"	24'-11"	24'-1"	25'-9"	25'-2"	24'-4"
		50	15	19'-0"	18'-4"	17'-6"	19'-0"	18'-4"	17'-6"	19'-0"	18'-4"	17'-6"	23'-4"	22'-4"	20'-11"	23'-6"	22'-9"	21'-8"	23'-8"	22'-11"	21'-10"

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

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

115% and 125% Load Duration

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

Span Length	BCI® 4500S 1.8 Series Joist 1¾" Flange Width											
	9½" BCI® 4500s 1.8			11⅞" BCI® 4500s 1.8			14" BCI® 4500s 1.8			16" BCI® 4500s 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	315	343	-	338	367	-	353	383	-	356	387	-
7	270	294	-	289	315	-	302	329	-	305	332	-
8	236	257	-	253	275	-	264	287	-	267	290	-
9	210	228	-	225	245	-	235	255	-	237	258	-
10	189	205	-	202	220	-	211	230	-	214	232	-
11	172	187	-	184	200	-	192	209	-	194	211	-
12	147	160	-	169	183	-	176	191	-	178	193	-
13	125	136	-	156	169	-	162	177	-	164	179	-
14	108	118	107	139	151	-	151	164	-	152	166	-
15	94	102	88	121	131	-	141	153	-	142	155	-
16	83	90	73	106	115	-	126	137	-	133	145	-
17	73	80	61	94	102	-	111	121	-	125	136	-
18	65	67	51	84	91	-	99	108	-	113	123	-
19	58	58	44	75	82	73	89	97	-	102	111	-
20	49	49	38	68	74	63	80	87	-	92	100	-
21	43	43	33	61	67	54	73	79	-	83	90	-
22				56	61	47	66	72	-	76	82	-
23				51	54	42	61	66	-	69	75	-
24				47	48	37	56	60	54	64	69	-
25				43	43	32	51	56	48	59	64	-
26							47	51	42	54	59	-
27							44	48	38	50	54	-
28							41	44	34	47	51	46
29										43	47	41
30										40	44	37

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

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

115% and 125% Load Duration

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

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

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

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

115% and 125% Load Duration

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

Span Length	BCI® 6000s 1.8 Series Joist 2⅝16" Flange Width											
	9½" BCI® 6000s 1.8			11⅞" BCI® 6000s 1.8			14" BCI® 6000s 1.8			16" BCI® 6000s 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	-	173	188	-	180	196	-	183	199	-
14	145	158	135	161	175	-	167	182	-	170	185	-
15	126	137	111	150	163	-	156	169	-	159	173	-
16	111	121	92	140	153	-	146	159	-	149	162	-
17	98	101	78	126	137	-	137	149	-	140	152	-
18	86	86	66	112	122	108	130	141	-	132	144	-
19	74	74	56	101	110	92	120	130	-	125	136	-
20	63	63	48	91	99	80	108	117	-	119	129	-
21	55	55	42	83	90	69	98	107	-	112	122	-
22	48	48	36	75	79	60	89	97	88	102	111	-
23	42	42	32	69	70	53	82	89	78	93	101	-
24				61	61	47	75	81	68	86	93	-
25				54	54	42	69	75	61	79	86	-
26				49	49	37	64	69	54	73	79	-
27				43	43	33	59	63	48	67	73	65
28							55	57	44	63	68	58

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

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

115% and 125% Load Duration

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

Span Length	BCI® 6500s 1.8 Series Joist 2 9/16" Flange Width											
	9½" BCI® 6500s 1.8			11⅞" BCI® 6500s 1.8			14" BCI® 6500s 1.8			16" BCI® 6500s 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	-	173	188	-	180	196	-	183	199	-
14	154	168	147	161	175	-	167	182	-	170	185	-
15	140	152	121	150	163	-	156	169	-	159	173	-
16	123	132	101	140	153	-	146	159	-	149	162	-
17	109	111	85	132	144	-	137	149	-	140	152	-
18	94	94	72	125	135	118	130	141	-	132	144	-
19	80	80	61	112	122	101	123	134	-	125	136	-
20	69	69	53	101	110	87	117	127	-	119	129	-
21	60	60	46	91	99	76	108	118	-	113	123	-
22	52	52	40	83	87	66	99	107	96	108	118	-
23	46	46	35	76	76	58	90	98	84	103	112	-
24	41	41	31	67	67	51	83	90	74	95	103	-
25				60	60	45	76	83	66	87	95	-
26				53	53	40	71	77	59	81	88	79
27				47	47	36	65	69	53	75	81	71
28				43	43	32	61	62	47	69	76	63
29							56	56	43	65	70	57
30							51	51	39	60	66	52
31							46	46	35	57	62	47
32							42	42	32	53	56	43
33										50	51	39
34										47	47	36
35										43	43	33

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

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

115% and 125% Load Duration

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

Span Length	BCI® 60s 2.0 Series Joist 2⅝" Flange Width									BCI® 90s 2.0 Series Joist 3½" Flange Width								
	11⅞" BCI® 60s 2.0			14" BCI® 60s 2.0			16" BCI® 60s 2.0			11⅞" BCI® 90s 2.0			14" BCI® 90s 2.0			16" BCI® 90s 2.0		
	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.	Total Load		Deflect.
	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240	Snow (115%)	Non-Snow (125%)	L/240
6	413	449	-	413	449	-	413	449	-	507	551	-	510	555	-	514	559	-
7	354	385	-	354	385	-	354	385	-	434	472	-	437	476	-	441	479	-
8	309	336	-	309	336	-	309	336	-	380	413	-	383	416	-	385	419	-
9	275	299	-	275	299	-	275	299	-	338	367	-	340	370	-	343	372	-
10	247	269	-	247	269	-	247	269	-	304	330	-	306	333	-	308	335	-
11	225	245	-	225	245	-	225	245	-	276	300	-	278	302	-	280	305	-
12	206	224	-	206	224	-	206	224	-	253	275	-	255	277	-	257	279	-
13	190	207	-	190	207	-	190	207	-	234	254	-	235	256	-	237	258	-
14	177	192	-	177	192	-	177	192	-	217	236	-	218	238	-	220	239	-
15	165	179	-	165	179	-	165	179	-	202	220	-	204	222	-	205	223	-
16	154	168	-	154	168	-	154	168	-	190	206	-	191	208	-	192	209	-
17	145	158	-	145	158	-	145	158	-	178	194	-	180	196	-	181	197	-
18	137	149	-	137	149	-	137	149	-	169	183	-	170	185	-	171	186	-
19	130	141	123	130	141	-	130	141	-	160	174	-	161	175	-	162	176	-
20	123	134	106	123	134	-	123	134	-	152	165	-	153	166	-	154	167	-
21	118	121	92	118	128	-	118	128	-	144	157	134	145	158	-	147	159	-
22	106	106	81	112	122	-	112	122	-	138	150	118	139	151	-	140	152	-
23	93	93	71	107	117	103	107	117	-	132	136	104	133	144	-	134	145	-
24	82	82	63	103	112	91	103	112	-	120	120	92	127	138	-	128	139	-
25	73	73	56	99	106	81	99	107	-	107	107	82	122	133	117	123	134	-
26	65	65	50	94	94	72	95	103	-	96	96	73	117	128	104	118	129	-
27	58	58	44	85	85	65	91	99	87	86	86	65	113	123	94	114	124	-
28	52	52	40	76	76	58	88	96	78	77	77	59	109	110	84	110	119	-
29	47	47	36	69	69	52	85	92	71	70	70	53	100	100	76	106	115	102
30	43	43	32	62	62	47	82	84	64	63	63	48	91	91	69	102	111	93
31				56	56	43	76	76	58	57	57	44	82	82	63	99	108	85
32				51	51	39	69	69	53	52	52	40	75	75	57	96	101	77
33				47	47	36	63	63	48	48	48	36	69	69	52	92	92	71
34				43	43	33	58	58	44	44	44	33	63	63	48	85	85	65
35							53	53	41	40	40	31	58	58	44	78	78	59

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

BCI® Joist Design Properties

BCI® Joist Series	Depth [inches]	Weight [plf]	Moment [ft-lbs]	EI x 10^6 [lb-in^2]	K x 10^6 [lbs]	Shear [lbs]	End Reaction [lbs]				Intermediate Reaction [lbs]			
							1½" Bearing		3½" Bearing		3½" Bearing		5¼" Bearing	
							No WS(1)	WS(2)	No WS(1)	WS(2)	No WS(1)	WS(2)	No WS(1)	WS(2)
4500s 1.8	9½	2.1	2360	155	5	1475	950	1125	1125	1275	2100	2350	2525	2750
	11⅞	2.4	3025	260	6	1625	950	1425	1425	1475	2250	2850	2525	3000
	14	2.7	3585	380	8	1825	950	1525	1450	1725	2350	3050	2525	3200
	16	3	4090	515	9	1975	950	1625	1475	1975	2400	3200	2525	3350
5000s 1.8	9½	2.3	2725	175	5	1475	950	1125	1125	1275	2100	2350	2525	2750
	11⅞	2.6	3485	295	6	1625	950	1425	1425	1475	2250	2850	2525	3000
	14	2.9	4130	430	8	1825	950	1525	1475	1725	2350	3050	2525	3200
	16	3.1	4715	580	9	1975	950	1625	1500	1975	2400	3200	2525	3350
6000s 1.8	9½	2.5	3165	200	5	1575	1175	1375	1375	1425	2400	2650	2700	2750
	11⅞	2.8	4060	335	6	1675	1175	1425	1425	1475	2500	2850	2900	3000
	14	3.1	4815	490	8	1925	1175	1525	1525	1725	2600	3150	2925	3200
	16	3.3	5495	660	9	2175	1175	1625	1550	1975	2650	3350	2950	3350
6500s 1.8	9½	2.7	3505	220	5	1575	1175	1375	1375	1425	2400	2650	2700	2750
	11⅞	3	4495	365	7	1675	1175	1425	1425	1475	2500	2850	2900	3000
	14	3.3	5330	535	8	1925	1175	1525	1525	1725	2600	3150	2925	3200
	16	3.5	6085	720	9	2175	1175	1625	1550	1975	2650	3350	2950	3350
60s 2.0	11⅞	3.2	6235	450	7	1675	1175	1425	1425	1475	2750	2850	3200	3250
	14	3.5	7440	660	8	1925	1175	1525	1525	1725	2750	3450	3200	3650
	16	3.8	8520	895	9	2175	1175	1625	1550	1975	2750	3650	3200	3750
90s 2.0	11⅞	4.3	9550	675	7	2150	1425	1850	1800	1950	3375	3700	4000	4350
	14	4.6	11390	980	8	2350	1450	1950	1850	2150	3400	3850	4100	4450
	16	4.9	13050	1330	9	2550	1475	2150	1900	2350	3425	4000	4200	4650

NOTES:

(1) No web stiffeners required.
(2) Web stiffeners required.

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

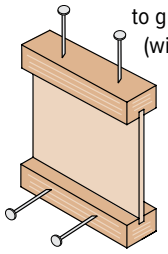
$$\Delta = \frac{5wl^4}{384\,EI} + \frac{wl^2}{K}$$

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

Building Code Evaluation Report

ICC-ES®/APA® ESR-1336 (IBC®, IRC®)

BCI® Joist Closest Allowable Nail Spacing



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

- If more than one row of nails is used, the rows must be offset at least ½ inch.
- Simpson Strong-Tie A35 connectors may be attached to the side of BCI® 60s & 90s joist flanges only. Use nails as specified by Simpson Strong-Tie; do not attach connectors on both sides of a flange at the same location.

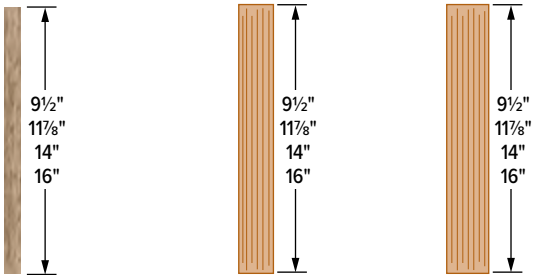
BCI® Diaphragm Table(1)

BCI® Series	Diaphragm Capacity(2) (3) [lb/ft]	
	Unblocked	Blocked
4500s, 5000s	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
6000s, 6500s	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
60s, 90s	As permitted for 3x framing in building code	As permitted for 3x framing in building code not to exceed 690 lb/ft.

NOTES:

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

Rimboard Product Profiles

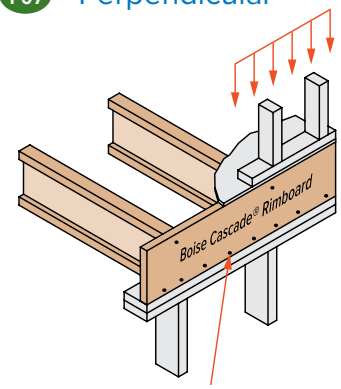


1" and 1⅛" Boise Cascade® Rimboard OSB

1½" Versa-Lam® LVL 1.8E 2650

1¾" Versa-Lam® LVL 2.1E 3100

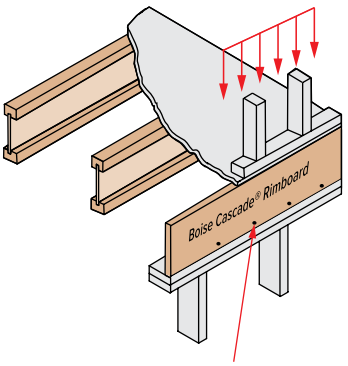
F07 Perpendicular



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

See chart for vertical load capacity

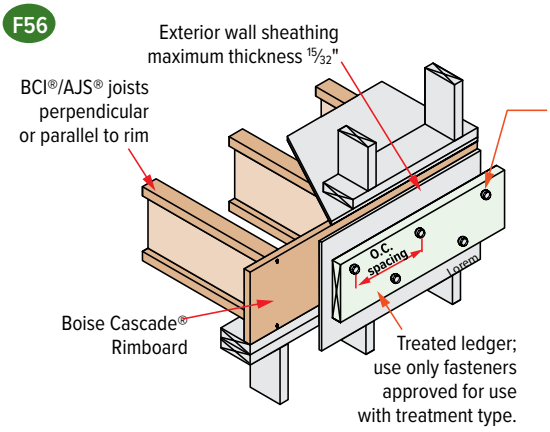
F07A Parallel



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

See chart for vertical load capacity

F56 Rimboard with Ledger Attachment



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

Minimum connection for 40/10 psf deck loading:

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

For snow loads greater than 40 psf and/or dead loads greater than 10 psf, size connection per max plf values shown above.

Notes

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

Boise Cascade Rimboard Properties

Product	Vertical Load Capacity Uniform [plf]	Vertical Load Capacity Point [lb]	Maximum Floor Diaphragm Lateral Capacity [lb/ft]	Allowable Design Values: Flexural Stress [lb/in²]	Modulus of Elasticity [lb/in²]	Horizontal Shear [lb/in²]	Compression Perpendicular to Grain [lb/in²]
1" Boise Cascade® Rimboard OSB (1)	3300	3500	180	Limited span capabilities, see Note 1			
1⅛" Boise Cascade® Rimboard OSB (1)	4400	3500	180				
1½" Versa-Lam® LVL 1.8E 2650 (2)	4250	3700	Permitted per building code for all nominal 2" thick framing floor diaphragms	2650	1,800,000	285	750
1¾" Versa-Lam® LVL 2.1E 3100 (2)	5700	4300		3100	2,000,000	285	750

Closest Allowable Nail Spacing (Narrow Face)

Nail Size		Boise Cascade® Rimboard OSB (1) 1"	Boise Cascade® Rimboard OSB (1) 1⅛"	Versa-Lam® LVL Rimboard (2) 1½" (1.8E 2650)	Versa-Lam® LVL Rimboard (2) 1¾" (2.1E 3100)
8d box	(0.113"ø x 2.5")	3"	3"	3"	2"
8d common	(0.131"ø x 2.5")	3"	3"	3"	3"
10d & 12d box	(0.128"ø x 3", 3.25")	See publication in note 1 for further nailing information.		3"	3"
16d box	(0.135"ø x 3.5")			3"	3"
10d & 12d common & 16d sinker	(0.148"ø x 3", 3.25")			4"	4"
16d common	(0.162"ø x 3.5")			6"	6"

NOTES:

1) See *Performance Rated Rim Boards*, APA® Form No. W345N for further product information.

(2) See ICC-ES®/APA® ESR-1040 for further information.

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.

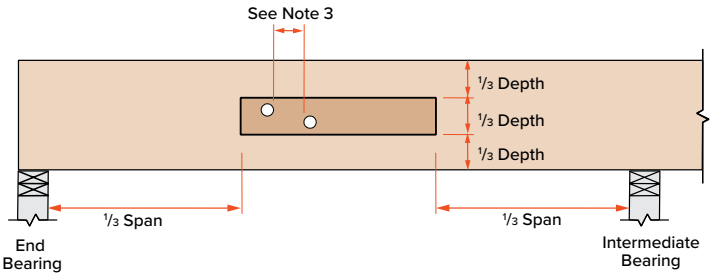
Fabrication: Versa-Lam® LVL beams shall be manufactured in a plant evaluated for fabrication by the governing code evaluation service and under the supervision of a third-party inspection agency listed by the corresponding evaluation service.

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



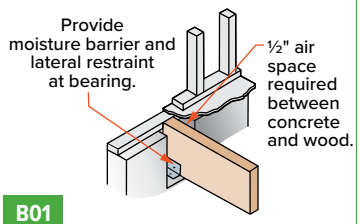
Allowable Round Holes

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

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. 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.*
6. Beams deflect under load. Size holes to provide clearance where required.
7. 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 or contact Boise Cascade EWP Engineering.

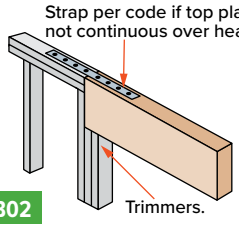
Versa-Lam® LVL Beam Details

BEARING AT CONCRETE/MASONRY WALLS



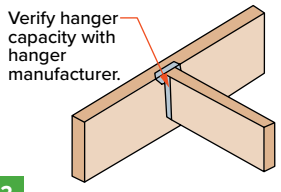
B01

BEARING FOR DOOR OR WINDOW HEADER



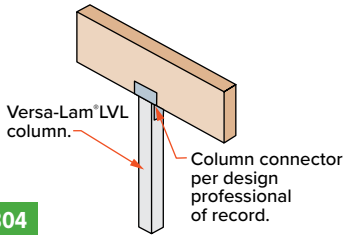
B02

BEAM TO BEAM CONNECTOR



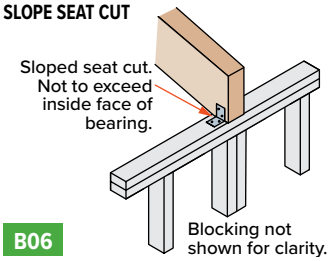
B03

BEARING AT COLUMN



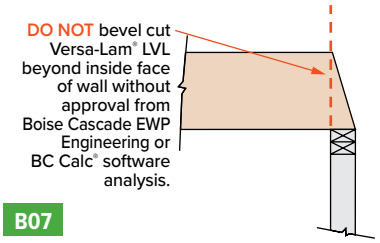
B04

SLOPE SEAT CUT



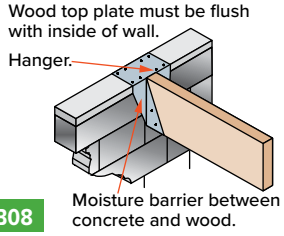
B06

BEVEL CUT



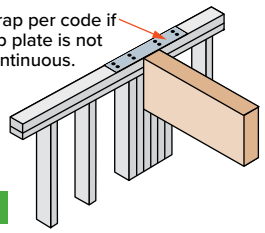
B07

BEAM TO CONCRETE/MASONRY WALLS



B08

BEARING FRAMING INTO WALL



B09

INSTALLATION NOTES

- Minimum of ½" air space between beam and wall pocket or adequate barrier must be provided between beam and concrete/masonry.
- Adequate bearing shall be provided. If not shown on plans, please refer to load tables on pages 28 – 30 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 (3)		½" Dia. Through Bolt (1)			⅝" Dia. Through Bolt (1)		
	2 rows 16d Sinkers @ 12" o.c.	3 rows 16d Sinkers @ 12" o.c.	2 rows @ 24" o.c. staggered	2 rows @ 12" o.c. staggered	2 rows @ 6" o.c. staggered	2 rows @ 24" o.c. staggered	2 rows @ 12" o.c. staggered	2 rows @ 6" o.c. staggered
1¾" Versa-Lam® LVL (Depths of 18" and less)								
2	470	705	505	1010	2020	560	1120	2245
3 (2)	350	525	375	755	1515	420	840	1685
4 (3)	use bolt schedule		335	670	1345	370	745	1495
3½" Versa-Lam® LVL								
2(3)	use bolt schedule		855	1715	N/A	1125	2250	N/A
1¾" Versa-Lam® LVL (Depths of 24" and less)								
Number of Members	Nailed (3)		½" Dia. Through Bolt (1)			⅝" Dia. Through Bolt (1)		
	3 rows 16d Sinkers @ 12" o.c.	4 rows 16d Sinkers @ 12" o.c.	3 rows @ 24" o.c. 8" staggered	3 rows @ 18" o.c. 6" staggered	3 rows @ 12" o.c. 4" staggered	3 rows @ 24" o.c. 8" staggered	3 rows @ 18" o.c. 6" staggered	3 rows @ 12" o.c. 4" staggered
2	705	940	755	1010	1515	840	1120	1685
3 (2)	525	705	565	755	1135	630	840	1260
4 (4)	use bolt schedule		505	670	1010	560	745	1120

1. Design values apply to common bolts that conform to ANSI/ASME standard B18.21-1981 (ASTM A307 Grades A&B, SAE J429 Grades 1 or 2, or higher). A washer not less than a standard cut washer shall be between the wood and the bolt head and between the wood and the nut. The distance from the edge of the beam to the bolt holes must be at least 2" for ½" bolts and 2½" for ⅝" bolts. Bolt holes shall be the same diameter as the bolt.
2. The nail schedules shown apply to both sides of a 3-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:

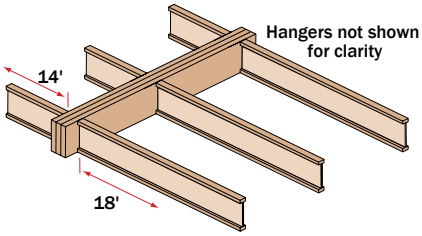
Plies	Depth	Nailing (2)	Maximum Uniform Load From One Side
(2) 1¾" plies	Depths 11⅞" & less	2 rows 16d box/sinker nails @ 12" o.c.	400 plf
	Depths 14" - 18"	3 rows 16d box/sinker nails @ 12" o.c.	600 plf
	Depth = 24"	4 rows 16d box/sinker nails @ 12" o.c.	800 plf
(3) 1¾" plies (1)	Depths 11⅞" & less	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) 1¾" plies	Depths 18" & less	2 rows ½" bolts @ 24" o.c., staggered	335 plf
	Depth = 24"	3 rows ½" bolts @ 24" o.c., staggered every 8"	505 plf
(2) 3½" plies	Depths 18" & less	2 rows ½" bolts @ 24" o.c., staggered	855 plf
	Depth 20" - 24"	3 rows ½" bolts @ 24" o.c., staggered every 8"	1285 plf

1. The nail schedules shown apply to both sides of a 3-member beam.
2. 16d box nails = 0.135" diameter x 3.5" length, 16d sinker nails = 0.148" diameter x 3.25" length.
3. Beams wider than 7" must be designed by the engineer of record.
4. 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.
5. Use allowable load tables or BC Calc® software to size beams.
6. An equivalent specific gravity of 0.5 may be used when designing specific connections with Versa-Lam®.
7. Connection values are based upon the NDS, 2018 Edition.
8. FastenMaster *TrussLOK®, Simpson Strong-Tie SDW or SDS, and MiTek WS screws may also be used to connect multiple member Versa-Lam® LVL beams, contact Boise Cascade EWP Engineering for 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.

1. Calculate the tributary width that beam is supporting:
   14' / 2 + 18' / 2 = 16'
2. Use PLF tables on pages 3-5 of this guide or BC Calc® to size beam.
   A Triple Versa-Lam® LVL 2.1 3100 1¾" x 14" is found to adequately support the design loads
3. Calculate the maximum plf load from one side (the right side in this case).
   Max. Side Load = (18' / 2) x (40 + 10 psf) = 450 plf
4. Go to the **Multiple Member Connection Table, Side-Loaded Applications, 1¾" Versa-Lam® LVL, 3 members.**
5. The proper connection schedule must have a capacity greater than the max. side load:
   Nailed: 3 rows 16d sinkers @ 12" o.c:
   525 plf is greater than 450 plf OK
   Bolts: ½" diameter 2 rows @ 12" staggered:
   755 plf is greater than 450 plf OK

Versa-Lam® LVL Floor Load Tables

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

Table Key: **Top value** = Allowable Total Load [plf]
Middle value = Allowable Live Load [plf]
Bottom value = Min. Bearing Length [inches] at End / Intermediate supports

SPAN (ft)	1¾" Versa-Lam® 2.1E 3100				Double Ply 1¾" Versa-Lam® 2.1E 3100 or 3½" Versa-Lam® 2.1E 3100						Triple Ply 1¾" Versa-Lam® 2.1E 3100 or 5¼" Versa-Lam® 2.1E 3100						Quadruple Ply 1¾" Versa-Lam® 2.1E 3100 or 7" Versa-Lam® 2.1E 3100					
	7¼"	9½"	11⅞"	14"	7¼"	9½"	11⅞"	14"	16"	18"	9½"	11⅞"	14"	16"	18"	20"	11⅞"	14"	16"	18"	20"	24"
6	763	1063	1424	1795	1525	2126	2849	3590	4387	4794	3189	4273	5384	6580	7191	7188	5697	7179	8773	9588	9584	9576
	693	-	-	-	1385	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.8 / 4.4	2.4 / 6.1	3.3 / 8.2	4.1 / 10.3	1.8 / 4.4	2.4 / 6.1	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	2.4 / 6.1	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	5.5 / 13.8	3.3 / 8.2	4.1 / 10.3	5 / 12.6	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
7	636	877	1160	1444	1271	1753	2321	2888	3482	4107	2630	3481	4331	5223	6160	6157	4641	5775	6964	8213	8209	8201
	452	-	-	-	905	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.7 / 4.3	2.4 / 5.9	3.1 / 7.8	3.9 / 9.7	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	1207	924	1492	1957	2414	2886	3402	2237	2936	3622	4328	5103	5384	3914	4829	5771	6803	7178	7170
	310	660	-	-	621	1321	-	-	-	-	1981	-	-	-	-	-	-	-	-	-	-	-
	1.5 / 3.5	2.3 / 5.7	3 / 7.5	3.7 / 9.3	1.5 / 3.5	2.3 / 5.7	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	2.3 / 5.7	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	5.5 / 13.8	3 / 7.5	3.7 / 9.3	4.4 / 11.1	5.2 / 13	5.5 / 13.8	5.5 / 13.8
9	329	649	846	1037	658	1297	1692	2074	2463	2884	1946	2537	3111	3694	4325	4782	3383	4148	4926	5767	6376	6368
	222	477	-	-	444	954	-	-	-	-	1431	-	-	-	-	-	-	-	-	-	-	-
	1.5 / 3	2.2 / 5.6	2.9 / 7.3	3.6 / 8.9	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	527	745	909	484	1055	1489	1817	2148	2502	1582	2234	2726	3222	3753	4301	2978	3635	4296	5003	5734	5726
	164	355	660	-	327	710	1321	-	-	-	1065	1981	-	-	-	-	2642	-	-	-	-	-
	1.5 / 3	2 / 5.1	2.9 / 7.1	3.5 / 8.7	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	401	665	808	365	803	1330	1617	1904	2209	1204	1995	2425	2856	3313	3800	2659	3233	3807	4417	5067	5201
	124	271	508	798	248	541	1015	1595	-	-	812	1523	2393	-	-	-	2031	3190	-	-	-	-
	1.5 / 3	1.7 / 4.3	2.8 / 7	3.4 / 8.5	1.5 / 3	1.7 / 4.3	2.8 / 7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	1.7 / 4.3	2.8 / 7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	5.4 / 13.4	2.8 / 7	3.4 / 8.5	4 / 10.1	4.7 / 11.7	5.4 / 13.4	5.5 / 13.8
12	141	312	585	728	282	623	1170	1456	1709	1977	935	1755	2184	2564	2965	3390	2340	2912	3418	3953	4519	4764
	96	211	398	629	193	422	796	1258	-	-	633	1194	1887	-	-	-	1592	2517	-	-	-	-
	1.5 / 3	1.5 / 3.6	2.7 / 6.8	3.4 / 8.4	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	246	470	662	221	493	941	1324	1550	1789	739	1411	1986	2326	2683	3059	1881	2647	3101	3577	4078	4394
	76	168	318	504	152	335	635	1009	1456	-	503	953	1513	2185	-	-	1270	2017	2913	-	-	-
	1.5 / 3	1.5 / 3.1	2.4 / 5.9	3.3 / 8.3	1.5 / 3	1.5 / 3.1	2.4 / 5.9	3.3 / 8.3	3.9 / 9.7	4.5 / 11.2	1.5 / 3.1	2.4 / 5.9	3.3 / 8.3	3.9 / 9.7	4.5 / 11.2	5.1 / 12.7	2.4 / 5.9	3.3 / 8.3	3.9 / 9.7	4.5 / 11.2	5.1 / 12.7	5.5 / 13.8
14	88	198	380	585	176	396	759	1171	1418	1633	594	1139	1756	2128	2449	2786	1519	2342	2837	3265	3715	4076
	61	135	257	410	123	270	514	820	1189	-	405	771	1230	1783	-	-	1029	1640	2378	-	-	-
	1.5 / 3	1.5 / 3	2.1 / 5.1	3.2 / 7.9	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	71	161	310	499	143	322	621	998	1307	1502	483	931	1497	1960	2253	2558	1242	1997	2614	3003	3410	3801
	50	111	211	338	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	2.9 / 7.2	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	58	132	257	414	117	265	514	829	1151	1390	397	770	1243	1727	2085	2364	1027	1658	2303	2780	3151	3561
	41	92	175	281	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	2.6 / 6.4	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		110	214	347	96	220	429	695	1018	1274	330	643	1042	1527	1911	2196	858	1389	2036	2547	2929	3348
		77	147	236	69	153	294	473	691	962	230	441	709	1037	1443	1931	588	945	1382	1924	2575	-
		1.5 / 3	1.5 / 3.6	2.3 / 5.7	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		92	181	294	80	185	361	587	865	1134	277	542	881	1298	1701	2051	723	1175	1731	2268	2735	3160
		65	124	201	58	130	249	401	588	820	194	373	602	882	1230	1650	498	802	1176	1640	2200	-
		1.5 / 3	1.5 / 3.2	2.1 / 5.2	1.5 / 3	1.5 / 3	1.5 / 3.2	2.1 / 5.2	3 / 7.6	4 / 9.9	1.5 / 3	1.5 / 3.2	2.1 / 5.2	3 / 7.6	4 / 9.9	4.8 / 11.9	1.5 / 3.2	2.1 / 5.2	3 / 7.6	4 / 9.9	4.8 / 11.9	5.5 / 13.8
19		78	153	250	67	156	307	500	739	1016	234	460	751	1109	1524	1863	614	1001	1479	2032	2484	2991
		55	106	172	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	1.5 / 3	1.5 / 3	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.7 / 9.4	1.5 / 3	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.7 / 9.4	4.6 / 11.4	1.5 / 3	1.9 / 4.7	2.7 / 6.8	3.7 / 9.4	4.6 / 11.4	5.5 / 13.8
20		66	131	215	57	133	263	429	636	895	199	394	644	954	1343	1678	525	859	1272	1790	2237	2839
		47	92	148	43	95	183	296	435	609	142	275	444	652	913	1230	366	592	870	1218	1640	2718
		1.5 / 3	1.5 / 3	1.7 / 4.2	1.5 / 3	1.5 / 3	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.5 / 8.7	1.5 / 3	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.5 / 8.7	4.3 / 10.8	1.5 / 3	1.7 / 4.2	2.5 / 6.2	3.5 / 8.7	4.3 / 10.8	5.5 / 13.8
22			98	161		98	196	322	479	678	147	293	483	719	1016	1379	391	644	959	1355	1839	2576
			69	112		72	138	224	330	464	107	208	336	496	696	940	277	448	661	928	1253	2091
			1.5 / 3	1.5 / 3.5		1.5 / 3	1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3	1.5 / 3	1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3	3.9 / 9.8	1.5 / 3	1.5 / 3.5	2.1 / 5.2	2.9 / 7.3	3.9 / 9.8	5.5 / 13.8
24			74	123		73	149	246	369	523	110	223	370	553	785	1070	297	493	738	1047	1426	2184
			54	87		55	107	174	257	361	83	161	261	385	542	733	214	348	513	722	978	1640
			1.5 / 3	1.5 / 3		1.5 / 3	1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2	1.5 / 3	1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2	3.4 / 8.4	1.5 / 3	1.5 / 3	1.8 / 4.4	2.5 / 6.2	3.4 / 8.4	5.1 / 12.8
26			57	96		56	115	192	289	411	84	172	288	433	617	844	230	384	577	823	1125	1853
			42	69		44	85	137	203	286	65	127	206	305	430	583	169	275	407	573	777	1308
			1.5 / 3	1.5 / 3		1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3	2.9 / 7.2	1.5 / 3	1.5 / 3	1.5 / 3.8	2.1 / 5.3	2.9 / 7.2	4.7 / 11.8
28				76			90	151	229	328	64	135	227	344	492	675	180	303	458	656	900	1541
				55			68	110	164	231	53	102	166	245	346	470	136	221	327	462	627	1060
				1.5 / 3			1.5 / 3	1.5 / 3	1.5 / 3.3	1.8 / 4.6	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.3	1.8 / 4.6	2.5 / 6.3	1.5 / 3	1.5 / 3	1.5 / 3.3	1.8 / 4.6	2.5 / 6.3	4.2 / 10.6
30				60			71	121	184	265	50	106	181	276	397	547	142	242	368	530	729	1256
				45			55	90	134	189	43	83	135	200	283	385	111	180	267	378	513	870
				1.5 / 3			1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	2.2 / 5.5	1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	2.2 / 5.5	3.7 / 9.3

- Total Load values are limited by shear, moment or deflection equal to L/240. Total Load values are the capacity of the beam in addition to its own weight.
- Live Load values are limited by deflection equal to L/360. Check the local building code for other deflection limits that may apply.
- Where a Live Load value is not shown, the Total Load value will control.
- Table values represent the most restrictive of simple or multiple span applications. Span is measured center to center of the supports. Analyze multiple span beams with BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume that lateral support is provided at each support and continuously along the top edge and applicable compression edges of the beam.
- Table values for Minimum Required Bearing Lengths are based on the allowable compression design value perpendicular to grain for the beam and the Total Load value shown. Other design considerations, such as a weaker support material, may warrant longer bearing lengths. Table values assume that support is provided across the full width of the beam.
- For 2-ply, 3-ply or 4-ply beams; double, triple or quadruple allowable total load and allowable live load values. Minimum required bearing lengths remain the same for any number of plies.
- 1¾" members deeper than 14" are to be used as multiple-member beams only. It may be possible to exceed this limitation by analyzing a specific, properly braced application using BC Calc® software.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with BC Calc® software.

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

Table Key: **Top value** = Allowable Total Load [plf]
Middle value = Allowable Live Load [plf]
Bottom value = Min. Bearing Length [inches] at End / Intermediate supports

SPAN (ft)	1¾" Versa-Lam® 2.1E 3100				Double Ply 1¾" Versa-Lam® 2.1E 3100 or 3½" Versa-Lam® 2.1E 3100						Triple Ply 1¾" Versa-Lam® 2.1E 3100 or 5¼" Versa-Lam® 2.1E 3100						Quadruple Ply 1¾" Versa-Lam® 2.1E 3100 or 7" Versa-Lam® 2.1E 3100					
	7¼"	9½"	11⅞"	14"	7¼"	9½"	11⅞"	14"	16"	18"	9½"	11⅞"	14"	16"	18"	20"	11⅞"	14"	16"	18"	20"	24"
6	878	1223	1639	2065	1755	2446	3278	4130	4796	4794	3669	4917	6195	7194	7191	7188	6556	8260	9592	9588	9584	9576
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2 / 5	2.8 / 7	3.8 / 9.4	4.7 / 11.8	2 / 5	2.8 / 7	3.8 / 9.4	4.7 / 11.8	5.5 / 13.8	5.5 / 13.8	2.8 / 7	3.8 / 9.4	4.7 / 11.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	3.8 / 9.4	4.7 / 11.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
7	731	1009	1335	1661	1463	2018	2670	3323	4007	4107	3027	4006	4984	6010	6160	6157	5341	6646	8013	8213	8209	8201
	678	-	-	-	1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2 / 4.9	2.7 / 6.8	3.6 / 8.9	4.4 / 11.1	2 / 4.9	2.7 / 6.8	3.6 / 8.9	4.4 / 11.1	5.4 / 13.4	5.5 / 13.8	2.7 / 6.8	3.6 / 8.9	4.4 / 11.1	5.4 / 13.4	5.5 / 13.8	5.5 / 13.8	3.6 / 8.9	4.4 / 11.1	5.4 / 13.4	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
8	598	858	1126	1389	1197	1717	2252	2779	3321	3591	2575	3379	4168	4981	5387	5384	4505	5558	6642	7182	7178	7170
	466	-	-	-	931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.8 / 4.6	2.6 / 6.6	3.5 / 8.6	4.3 / 10.6	1.8 / 4.6	2.6 / 6.6	3.5 / 8.6	4.3 / 10.6	5.1 / 12.7	5.5 / 13.8	2.6 / 6.6	3.5 / 8.6	4.3 / 10.6	5.1 / 12.7	5.5 / 13.8	5.5 / 13.8	3.5 / 8.6	4.3 / 10.6	5.1 / 12.7	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
9	440	747	974	1194	880	1493	1947	2387	2835	3190	2240	2921	3581	4252	4785	4782	3894	4774	5670	6380	6376	6368
	333	715	-	-	665	1431	-	-	-	-	2146	-	-	-	-	-	-	-	-	-	-	-
	1.5 / 3.8	2.6 / 6.4	3.4 / 8.4	4.1 / 10.3	1.5 / 3.8	2.6 / 6.4	3.4 / 8.4	4.1 / 10.3	4.9 / 12.2	5.5 / 13.8	2.6 / 6.4	3.4 / 8.4	4.1 / 10.3	4.9 / 12.2	5.5 / 13.8	5.5 / 13.8	3.4 / 8.4	4.1 / 10.3	4.9 / 12.2	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
10	324	637	857	1046	648	1274	1714	2092	2472	2869	1912	2571	3138	3709	4304	4301	3429	4184	4945	5738	5734	5726
	246	532	-	-	491	1065	-	-	-	-	1597	-	-	-	-	-	-	-	-	-	-	-
	1.5 / 3.1	2.4 / 6.1	3.3 / 8.2	4 / 10	1.5 / 3.1	2.4 / 6.1	3.3 / 8.2	4 / 10	4.7 / 11.9	5.5 / 13.8	2.4 / 6.1	3.3 / 8.2	4 / 10	4.7 / 11.9	5.5 / 13.8	5.5 / 13.8	3.3 / 8.2	4 / 10	4.7 / 11.9	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
11	245	526	765	931	489	1052	1531	1861	2192	2543	1577	2296	2792	3288	3814	3907	3062	3723	4383	5085	5209	5201
	186	406	762	-	372	812	1523	-	-	-	1218	2285	-	-	-	-	3046	-	-	-	-	-
	1.5 / 3	2.2 / 5.6	3.2 / 8.1	3.9 / 9.8	1.5 / 3	2.2 / 5.6	3.2 / 8.1	3.9 / 9.8	4.6 / 11.6	5.4 / 13.4	2.2 / 5.6	3.2 / 8.1	3.9 / 9.8	4.6 / 11.6	5.4 / 13.4	5.5 / 13.8	3.2 / 8.1	3.9 / 9.8	4.6 / 11.6	5.4 / 13.4	5.5 / 13.8	5.5 / 13.8
12	189	417	674	838	378	834	1347	1676	1968	2276	1252	2021	2514	2952	3414	3579	2694	3353	3936	4552	4772	4764
	144	317	597	-	289	633	1194	-	-	-	950	1791	-	-	-	-	2389	-	-	-	-	-
	1.5 / 3	1.9 / 4.8	3.1 / 7.8	3.9 / 9.7	1.5 / 3	1.9 / 4.8	3.1 / 7.8	3.9 / 9.7	4.5 / 11.3	5.2 / 13.1	1.9 / 4.8	3.1 / 7.8	3.9 / 9.7	4.5 / 11.3	5.2 / 13.1	5.5 / 13.8	3.1 / 7.8	3.9 / 9.7	4.5 / 11.3	5.2 / 13.1	5.5 / 13.8	5.5 / 13.8
13	149	330	573	762	297	660	1146	1524	1785	2060	991	1719	2287	2678	3089	3301	2292	3049	3571	4119	4402	4394
	114	251	476	756	229	503	953	1513	-	-	754	1429	2269	-	-	-	1905	3026	-	-	-	-
	1.5 / 3	1.7 / 4.1	2.9 / 7.2	3.8 / 9.5	1.5 / 3	1.7 / 4.1	2.9 / 7.2	3.8 / 9.5	4.5 / 11.2	5.1 / 12.9	1.7 / 4.1	2.9 / 7.2	3.8 / 9.5	4.5 / 11.2	5.1 / 12.9	5.5 / 13.8	2.9 / 7.2	3.8 / 9.5	4.5 / 11.2	5.1 / 12.9	5.5 / 13.8	5.5 / 13.8
14	119	265	493	674	238	531	987	1349	1634	1880	796	1480	2023	2450	2821	3063	1973	2697	3267	3761	4084	4076
	92	203	386	615	184	405	771	1230	-	-	608	1157	1845	-	-	-	1543	2460	-	-	-	-
	1.5 / 3	1.5 / 3.6	2.7 / 6.7	3.6 / 9.1	1.5 / 3	1.5 / 3.6	2.7 / 6.7	3.6 / 9.1	4.4 / 11	5.1 / 12.7	1.5 / 3.6	2.7 / 6.7	3.6 / 9.1	4.4 / 11	5.1 / 12.7	5.5 / 13.8	2.7 / 6.7	3.6 / 9.1	4.4 / 11	5.1 / 12.7	5.5 / 13.8	5.5 / 13.8
15	96	216	416	586	193	432	832	1173	1505	1730	649	1248	1759	2258	2595	2857	1664	2346	3011	3459	3809	3801
	75	166	317	506	150	332	633	1013	1473	-	497	950	1519	2210	-	-	1266	2025	2946	-	-	-
	1.5 / 3	1.5 / 3.2	2.4 / 6	3.4 / 8.5	1.5 / 3	1.5 / 3.2	2.4 / 6	3.4 / 8.5	4.3 / 10.9	5 / 12.5	1.5 / 3.2	2.4 / 6	3.4 / 8.5	4.3 / 10.9	5 / 12.5	5.5 / 13.8	2.4 / 6	3.4 / 8.5	4.3 / 10.9	5 / 12.5	5.5 / 13.8	5.5 / 13.8
16	79	178	344	515	158	356	689	1029	1327	1601	535	1033	1544	1990	2402	2677	1377	2058	2653	3202	3569	3561
	62	137	263	421	124	275	526	843	1230	-	412	788	1264	1845	-	-	1051	1686	2460	-	-	-
	1.5 / 3	1.5 / 3	2.1 / 5.3	3.2 / 7.9	1.5 / 3	1.5 / 3	2.1 / 5.3	3.2 / 7.9	4.1 / 10.2	4.9 / 12.3	1.5 / 3	2.1 / 5.3	3.2 / 7.9	4.1 / 10.2	4.9 / 12.3	5.5 / 13.8	2.1 / 5.3	3.2 / 7.9	4.1 / 10.2	4.9 / 12.3	5.5 / 13.8	5.5 / 13.8
17	65	148	288	455	131	297	576	910	1173	1468	445	864	1365	1760	2201	2517	1152	1820	2346	2935	3356	3348
	52	115	220	354	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	1.5 / 3	1.5 / 3	1.9 / 4.8	3 / 7.5	1.5 / 3	1.5 / 3	1.9 / 4.8	3 / 7.5	3.9 / 9.6	4.8 / 12	1.5 / 3	1.9 / 4.8	3 / 7.5	3.9 / 9.6	4.8 / 12	5.5 / 13.8	1.9 / 4.8	3 / 7.5	3.9 / 9.6	4.8 / 12	5.5 / 13.8	5.5 / 13.8
18	55	125	243	394	109	249	486	788	1045	1307	374	729	1182	1567	1961	2364	972	1576	2089	2614	3151	3160
	44	97	187	301	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	1.5 / 3	1.5 / 3	1.7 / 4.3	2.8 / 6.9	1.5 / 3	1.5 / 3	1.7 / 4.3	2.8 / 6.9	3.6 / 9.1	4.5 / 11.4	1.5 / 3	1.7 / 4.3	2.8 / 6.9	3.6 / 9.1	4.5 / 11.4	5.5 / 13.7	1.7 / 4.3	2.8 / 6.9	3.6 / 9.1	4.5 / 11.4	5.5 / 13.7	5.5 / 13.8
19	46	106	207	336	92	211	413	672	936	1171	317	620	1008	1404	1757	2147	827	1344	1872	2342	2862	2991
	37	83	160	257	74	166	319	515	756	1056	249	479	772	1133	1584	2130	638	1029	1511	2112	2839	-
	1.5 / 3	1.5 / 3	1.5 / 3.8	2.5 / 6.2	1.5 / 3	1.5 / 3	1.5 / 3.8	2.5 / 6.2	3.4 / 8.6	4.3 / 10.8	1.5 / 3	1.5 / 3.8	2.5 / 6.2	3.4 / 8.6	4.3 / 10.8	5.3 / 13.1	1.5 / 3.8	2.5 / 6.2	3.4 / 8.6	4.3 / 10.8	5.3 / 13.1	5.5 / 13.8
20		90	177	289	78	180	354	577	843	1055	270	531	866	1265	1583	1934	708	1155	1686	2110	2579	2839
		71	137	222	64	142	275	444	652	913	214	412	666	979	1370	1845	549	887	1305	1827	2460	-
		1.5 / 3	1.5 / 3.5	2.3 / 5.6	1.5 / 3	1.5 / 3	1.5 / 3.5	2.3 / 5.6	3.3 / 8.2	4.1 / 10.2	1.5 / 3	1.5 / 3.5	2.3 / 5.6	3.3 / 8.2	4.1 / 10.2	5 / 12.5	1.5 / 3.5	2.3 / 5.6	3.3 / 8.2	4.1 / 10.2	5 / 12.5	5.5 / 13.8
22		67	132	217	57	134	265	434	645	869	200	397	651	967	1303	1593	529	868	1289	1738	2124	2576
		54	104	168	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	1.5 / 3	1.5 / 3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.7 / 9.3	1.5 / 3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.7 / 9.3	4.5 / 11.3	1.5 / 3	1.9 / 4.7	2.8 / 6.9	3.7 / 9.3	4.5 / 11.3	5.5 / 13.8
24		51	101	167	42	101	202	333	497	704	152	303	500	746	1056	1334	404	667	994	1408	1779	2357
		42	80	130	37	83	161	261	385	542	125	241	391	578	813	1100	321	521	770	1083	1467	-
		1.5 / 3	1.5 / 3	1.6 / 4	1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	2.3 / 5.9	3.3 / 8.3	1.5 / 3	1.5 / 3	1.6 / 4	2.3 / 5.9	3.3 / 8.3	4.2 / 10.4	1.5 / 3	1.6 / 4	2.3 / 5.9	3.3 / 8.3	4.2 / 10.4	5.5 / 13.8
26			79	130		78	157	261	390	555	116	236	391	585	832	1132	314	521	781	1109	1510	2139
			63	103		65	127	206	305	430	98	190	309	457	645	874	254	412	610	859	1166	1963
			1.5 / 3	1.5 / 3.4		1.5 / 3	1.5 / 3	1.5 / 3.4	2 / 5	2.8 / 7.1	1.5 / 3	1.5 / 3	1.5 / 3.4	2 / 5	2.8 / 7.1	3.8 / 9.6	1.5 / 3	1.5 / 3.4	2 / 5	2.8 / 7.1	3.8 / 9.6	5.4 / 13.5
28			62	103		60	124	207	311	443	91	186	310	466	665	910	248	413	622	887	1214	1837
			51	83		53	102	166	245	346	79	153	249	368	520	706	204	331	491	693	941	1590
			1.5 / 3	1.5 / 3		1.5 / 3	1.5 / 3	1.5 / 3	1.7 / 4.4	2.5 / 6.2	1.5 / 3	1.5 / 3	1.5 / 3	1.7 / 4.4	2.5 / 6.2	3.3 / 8.4	1.5 / 3	1.5 / 3	1.7 / 4.4	2.5 / 6.2	3.3 / 8.4	5 / 12.6
30			49	83		47	99	166	251	359	71	148	249	376	539	740	197	332	502	718	986	1594
			42	68		43	83	135	200	283	64	125	203	301	425	578	166	270	401	566	770	1305
			1.5 / 3	1.5 / 3		1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.2 / 5.4	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.2 / 5.4	2.9 / 7.3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.2 / 5.4	2.9 / 7.3	4.7 / 11.7

- Total Load values are limited by shear, moment or deflection equal to L/180. Total Load values are the capacity of the beam in addition to its own weight.
- Live Load values are limited by deflection equal to L/240. Check the local building code for other deflection limits that may apply. Flat and low slope roofs may require more restrictive deflection limits, consult project's design professional of record.
- Where a Live Load value is not shown, the Total Load value will control.
- Table values represent the most restrictive of simple or multiple span applications. Span is measured center to center of the supports. Analyze multiple span beams with BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume that lateral support is provided at each support and continuously along the top edge and applicable compression edges of the beam.
- Table values for Minimum Required Bearing Lengths are based on the allowable compression design value perpendicular to grain for the beam and the Total Load value shown. Other design considerations, such as a weaker support material, may warrant longer bearing lengths. Table values assume that support is provided across the full width of the beam.
- For 2-ply, 3-ply or 4-ply beams; double, triple or quadruple allowable total load and allowable live load values. Minimum required bearing lengths remain the same for any number of plies.
- 1¾" members deeper than 14" are to be used as multiple-member beams only. It may be possible to exceed this limitation by analyzing a specific, properly braced application using BC Calc® software.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with BC Calc® software.

Versa-Lam® LVL Roof Load Tables

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

Table Key: **Top value** = Allowable Total Load [plf]
Middle value = Allowable Live Load [plf]
Bottom value = Min. Bearing Length [inches] at End / Intermediate supports

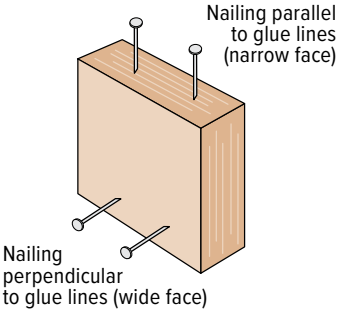
SPAN (ft)	1¾" Versa-Lam® 2.1E 3100				Double Ply 1¾" Versa-Lam® 2.1E 3100 or 3½" Versa-Lam® 2.1E 3100						Triple Ply 1¾" Versa-Lam® 2.1E 3100 or 5¼" Versa-Lam® 2.1E 3100						Quadruple Ply 1¾" Versa-Lam® 2.1E 3100 or 7" Versa-Lam® 2.1E 3100					
	7¼"	9½"	11⅞"	14"	7¼"	9½"	11⅞"	14"	16"	18"	9½"	11⅞"	14"	16"	18"	20"	11⅞"	14"	16"	18"	20"	24"
6	954	1330	1782	2245	1908	2660	3564	4491	4796	4794	3990	5346	6736	7194	7191	7188	7128	8981	9592	9588	9584	9576
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.2 / 5.5	3.1 / 7.6	4.1 / 10.2	5.1 / 12.9	2.2 / 5.5	3.1 / 7.6	4.1 / 10.2	5.1 / 12.9	5.5 / 13.8	5.5 / 13.8	3.1 / 7.6	4.1 / 10.2	5.1 / 12.9	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	4.1 / 10.2	5.1 / 12.9	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
7	795	1097	1452	1807	1591	2194	2904	3613	4109	4107	3291	4356	5420	6163	6160	6157	5807	7226	8217	8213	8209	8201
	678	-	-	-	1357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2.1 / 5.3	2.9 / 7.3	3.9 / 9.7	4.8 / 12.1	2.1 / 5.3	2.9 / 7.3	3.9 / 9.7	4.8 / 12.1	5.5 / 13.8	5.5 / 13.8	2.9 / 7.3	3.9 / 9.7	4.8 / 12.1	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	3.9 / 9.7	4.8 / 12.1	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
8	617	933	1225	1511	1235	1867	2449	3022	3593	3591	2800	3674	4532	5390	5387	5384	4899	6043	7186	7182	7178	7170
	466	-	-	-	931	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1.9 / 4.7	2.9 / 7.1	3.8 / 9.4	4.6 / 11.6	1.9 / 4.7	2.9 / 7.1	3.8 / 9.4	4.6 / 11.6	5.5 / 13.8	5.5 / 13.8	2.9 / 7.1	3.8 / 9.4	4.6 / 11.6	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	3.8 / 9.4	4.6 / 11.6	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
9	440	812	1059	1298	880	1624	2117	2596	3083	3190	2436	3176	3894	4624	4785	4782	4235	5192	6166	6380	6376	6368
	333	715	-	-	665	1431	-	-	-	-	2146	-	-	-	-	-	-	-	-	-	-	-
	1.5 / 3.8	2.8 / 7	3.7 / 9.1	4.5 / 11.2	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	5.5 / 13.8	3.7 / 9.1	4.5 / 11.2	5.3 / 13.3	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
10	324	693	932	1138	648	1386	1864	2275	2689	2869	2079	2797	3413	4033	4304	4301	3729	4550	5378	5738	5734	5726
	246	532	-	-	491	1065	-	-	-	-	1597	-	-	-	-	-	-	-	-	-	-	-
	1.5 / 3.1	2.7 / 6.6	3.6 / 8.9	4.4 / 10.9	1.5 / 3.1	2.7 / 6.6	3.6 / 8.9	4.4 / 10.9	5.2 / 12.9	5.5 / 13.8	2.7 / 6.6	3.6 / 8.9	4.4 / 10.9	5.2 / 12.9	5.5 / 13.8	5.5 / 13.8	3.6 / 8.9	4.4 / 10.9	5.2 / 12.9	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
11	245	537	833	1012	489	1073	1665	2024	2384	2607	1610	2498	3037	3576	3910	3907	3330	4049	4767	5213	5209	5201
	186	406	762	-	372	812	1523	-	-	-	1218	2285	-	-	-	-	3046	-	-	-	-	-
	1.5 / 3	2.3 / 5.7	3.5 / 8.8	4.3 / 10.7	1.5 / 3	2.3 / 5.7	3.5 / 8.8	4.3 / 10.7	5 / 12.6	5.5 / 13.8	2.3 / 5.7	3.5 / 8.8	4.3 / 10.7	5 / 12.6	5.5 / 13.8	5.5 / 13.8	3.5 / 8.8	4.3 / 10.7	5 / 12.6	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
12	189	417	733	912	378	834	1465	1823	2141	2388	1252	2198	2735	3211	3582	3579	2931	3647	4281	4776	4772	4764
	144	317	597	-	289	633	1194	-	-	-	950	1791	-	-	-	-	2389	-	-	-	-	-
	1.5 / 3	1.9 / 4.8	3.4 / 8.4	4.2 / 10.5	1.5 / 3	1.9 / 4.8	3.4 / 8.4	4.2 / 10.5	4.9 / 12.3	5.5 / 13.8	1.9 / 4.8	3.4 / 8.4	4.2 / 10.5	4.9 / 12.3	5.5 / 13.8	5.5 / 13.8	3.4 / 8.4	4.2 / 10.5	4.9 / 12.3	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
13	149	330	623	829	297	660	1247	1658	1942	2203	991	1870	2487	2913	3304	3301	2494	3316	3884	4406	4402	4394
	114	251	476	756	229	503	953	1513	-	-	754	1429	2269	-	-	-	1905	3026	-	-	-	-
	1.5 / 3	1.7 / 4.1	3.1 / 7.8	4.1 / 10.4	1.5 / 3	1.7 / 4.1	3.1 / 7.8	4.1 / 10.4	4.8 / 12.1	5.5 / 13.8	1.7 / 4.1	3.1 / 7.8	4.1 / 10.4	4.8 / 12.1	5.5 / 13.8	5.5 / 13.8	3.1 / 7.8	4.1 / 10.4	4.8 / 12.1	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
14	119	265	508	734	238	531	1017	1467	1777	2044	796	1525	2201	2666	3066	3063	2033	2934	3554	4088	4084	4076
	92	203	386	615	184	405	771	1230	-	-	608	1157	1845	-	-	-	1543	2460	-	-	-	-
	1.5 / 3	1.5 / 3.6	2.7 / 6.9	4 / 9.9	1.5 / 3	1.5 / 3.6	2.7 / 6.9	4 / 9.9	4.8 / 12	5.5 / 13.8	1.5 / 3.6	2.7 / 6.9	4 / 9.9	4.8 / 12	5.5 / 13.8	5.5 / 13.8	2.7 / 6.9	4 / 9.9	4.8 / 12	5.5 / 13.8	5.5 / 13.8	5.5 / 13.8
15	96	216	416	638	193	432	832	1276	1638	1882	649	1248	1914	2456	2823	2857	1664	2552	3275	3763	3809	3801
	75	166	317	506	150	332	633	1013	1473	-	497	950	1519	2210	-	-	1266	2025	2946	-	-	-
	1.5 / 3	1.5 / 3.2	2.4 / 6	3.7 / 9.2	1.5 / 3	1.5 / 3.2	2.4 / 6	3.7 / 9.2	4.7 / 11.8	5.4 / 13.6	1.5 / 3.2	2.4 / 6	3.7 / 9.2	4.7 / 11.8	5.4 / 13.6	5.5 / 13.8	2.4 / 6	3.7 / 9.2	4.7 / 11.8	5.4 / 13.6	5.5 / 13.8	5.5 / 13.8
16	79	178	344	555	158	356	689	1110	1443	1742	535	1033	1665	2165	2613	2677	1377	2220	2887	3484	3569	3561
	62	137	263	421	124	275	526	843	1230	1707	412	788	1264	1845	2561	-	1051	1686	2460	3415	-	-
	1.5 / 3	1.5 / 3	2.1 / 5.3	3.4 / 8.6	1.5 / 3	1.5 / 3	2.1 / 5.3	3.4 / 8.6	4.4 / 11.1	5.4 / 13.4	1.5 / 3	2.1 / 5.3	3.4 / 8.6	4.4 / 11.1	5.4 / 13.4	5.5 / 13.8	2.1 / 5.3	3.4 / 8.6	4.4 / 11.1	5.4 / 13.4	5.5 / 13.8	5.5 / 13.8
17	65	148	288	466	131	297	576	931	1277	1597	445	864	1397	1915	2395	2517	1152	1862	2553	3193	3356	3348
	52	115	220	354	104	230	441	709	1037	1443	345	661	1063	1555	2165	-	882	1418	2074	2886	-	-
	1.5 / 3	1.5 / 3	1.9 / 4.8	3.1 / 7.7	1.5 / 3	1.5 / 3	1.9 / 4.8	3.1 / 7.7	4.2 / 10.5	5.2 / 13.1	1.5 / 3	1.9 / 4.8	3.1 / 7.7	4.2 / 10.5	5.2 / 13.1	5.5 / 13.8	1.9 / 4.8	3.1 / 7.7	4.2 / 10.5	5.2 / 13.1	5.5 / 13.8	5.5 / 13.8
18	55	125	243	394	109	249	486	788	1137	1422	374	729	1182	1705	2133	2376	972	1576	2274	2845	3168	3160
	44	97	187	301	87	194	373	602	882	1230	291	560	902	1322	1845	-	747	1203	1763	2460	-	-
	1.5 / 3	1.5 / 3	1.7 / 4.3	2.8 / 6.9	1.5 / 3	1.5 / 3	1.7 / 4.3	2.8 / 6.9	4 / 9.9	4.9 / 12.3	1.5 / 3	1.7 / 4.3	2.8 / 6.9	4 / 9.9	4.9 / 12.3	5.5 / 13.8	1.7 / 4.3	2.8 / 6.9	4 / 9.9	4.9 / 12.3	5.5 / 13.8	5.5 / 13.8
19	46	106	207	336	92	211	413	672	991	1275	317	620	1008	1487	1912	2249	827	1344	1983	2549	2999	2991
	37	83	160	257	74	166	319	515	756	1056	249	479	772	1133	1584	2130	638	1029	1511	2112	2839	-
	1.5 / 3	1.5 / 3	1.5 / 3.8	2.5 / 6.2	1.5 / 3	1.5 / 3	1.5 / 3.8	2.5 / 6.2	3.6 / 9.1	4.7 / 11.7	1.5 / 3	1.5 / 3.8	2.5 / 6.2	3.6 / 9.1	4.7 / 11.7	5.5 / 13.8	1.5 / 3.8	2.5 / 6.2	3.6 / 9.1	4.7 / 11.7	5.5 / 13.8	5.5 / 13.8
20	39	90	177	289	78	180	354	577	854	1149	270	531	866	1280	1723	2105	708	1155	1707	2297	2807	2839
	32	71	137	222	64	142	275	444	652	913	214	412	666	979	1370	1845	549	887	1305	1827	2460	-
	1.5 / 3	1.5 / 3	1.5 / 3.5	2.3 / 5.6	1.5 / 3	1.5 / 3	1.5 / 3.5	2.3 / 5.6	3.3 / 8.3	4.4 / 11.1	1.5 / 3	1.5 / 3.5	2.3 / 5.6	3.3 / 8.3	4.4 / 11.1	5.4 / 13.6	1.5 / 3.5	2.3 / 5.6	3.3 / 8.3	4.4 / 11.1	5.4 / 13.6	5.5 / 13.8
22		67	132	217	57	134	265	434	645	909	200	397	651	967	1364	1735	529	868	1289	1819	2313	2576
		54	104	168	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	1.5 / 3	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
24		51	101	167	42	101	202	333	497	704	152	303	500	746	1056	1436	404	667	994	1408	1915	2357
		42	80	130	37	83	161	261	385	542	125	241	391	578	813	1100	321	521	770	1083	1467	-
		1.5 / 3	1.5 / 3	1.6 / 4	1.5 / 3	1.5 / 3	1.5 / 3	1.6 / 4	2.3 / 5.9	3.3 / 8.3	1.5 / 3	1.5 / 3	1.6 / 4	2.3 / 5.9	3.3 / 8.3	4.5 / 11.2	1.5 / 3	1.6 / 4	2.3 / 5.9	3.3 / 8.3	4.5 / 11.2	5.5 / 13.8
26		39	79	130		78	157	261	390	555	116	236	391	585	832	1135	314	521	781	1109	1513	2172
		33	63	103		65	127	206	305	430	98	190	309	457	645	874	254	412	610	859	1166	1963
		1.5 / 3	1.5 / 3	1.5 / 3.4		1.5 / 3	1.5 / 3	1.5 / 3.4	2 / 5	2.8 / 7.1	1.5 / 3	1.5 / 3	1.5 / 3.4	2 / 5	2.8 / 7.1	3.8 / 9.6	1.5 / 3	1.5 / 3.4	2 / 5	2.8 / 7.1	3.8 / 9.6	5.5 / 13.8
28			62	103		60	124	207	311	443	91	186	310	466	665	910	248	413	622	887	1214	2001
			51	83		53	102	166	245	346	79	153	249	368	520	706	204	331	491	693	941	1590
			1.5 / 3	1.5 / 3		1.5 / 3	1.5 / 3	1.5 / 3	1.7 / 4.4	2.5 / 6.2	1.5 / 3	1.5 / 3	1.5 / 3	1.7 / 4.4	2.5 / 6.2	3.3 / 8.4	1.5 / 3	1.5 / 3	1.7 / 4.4	2.5 / 6.2	3.3 / 8.4	5.5 / 13.7
30			49	83		47	99	166	251	359	71	148	249	376	539	740	197	332	502	718	986	1691
			42	68		43	83	135	200	283	64	125	203	301	425	578	166	270	401	566	770	1305
			1.5 / 3	1.5 / 3		1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.2 / 5.4	1.5 / 3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.2 / 5.4	2.9 / 7.3	1.5 / 3	1.5 / 3	1.5 / 3.8	2.2 / 5.4	2.9 / 7.3	5 / 12.4

- Total Load values are limited by shear, moment or deflection equal to L/180. Total Load values are the capacity of the beam in addition to its own weight.
- Live Load values are limited by deflection equal to L/240. Check the local building code for other deflection limits that may apply. Flat and low slope roofs may require more restrictive deflection limits, consult project's design professional of record.
- Where a Live Load value is not shown, the Total Load value will control.
- Table values represent the most restrictive of simple or multiple span applications. Span is measured center to center of the supports. Analyze multiple span beams with BC Calc® software if the length of any span is less than half the length of an adjacent span.
- Table values assume that lateral support is provided at each support and continuously along the top edge and applicable compression edges of the beam.
- Table values for Minimum Required Bearing Lengths are based on the allowable compression design value perpendicular to grain for the beam and the Total Load value shown. Other design considerations, such as a weaker support material, may warrant longer bearing lengths. Table values assume that support is provided across the full width of the beam.
- For 2-ply, 3-ply or 4-ply beams; double, triple or quadruple allowable total load and allowable live load values. Minimum required bearing lengths remain the same for any number of plies.
- 1¾" members deeper than 14" are to be used as multiple-member beams only. It may be possible to exceed this limitation by analyzing a specific, properly braced application using BC Calc® software.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with BC Calc® software.

Versa-Lam® LVL Allowable Nailing and Design Values

Closest Allowable Nail Spacing

Versa-Lam® LVL Products Nail Size		Nailing Parallel to Glue Lines (Narrow Face)[1]						Nailing Perpendicular to Glue Lines (Wide Face)	
		Versa-Lam® LVL 1½"		Versa-Lam® LVL 1¾"		Versa-Lam® LVL 3½" & Wider		All Products	
		O.C.	End	O.C.	End	O.C.	End	O.C.	End
8d Box	(0.113"ø x 2.5")	3"	1½"	2"	1"	2"	½"	2"	½"
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"



1) For 1¾" thickness and greater, 2 rows of nails (such as for a metal strap) are allowed (use ½" minimum offset between rows and stagger nails).

- Offset and stagger nail rows from floor sheathing and wall sole plate.
- Simpson Strong-Tie A35 and LPT4 connectors may be attached to the side of Versa-Lam® LVL. Use nails as specified by Simpson Strong-Tie.

Versa-Lam® LVL Design Values

Grade	Width [in]	Depth [in]	Weight [lb/ft]	Allowable Shear [lb]	Allowable Moment [ft-lb]	Moment of Inertia [in⁴]
Vera-Stud® 1.8E 2650	1½	3½	1.5	998	776	5.4
		5½	2.4	1,568	1,821	20.8
		7¼	3.2	2,066	3,069	47.6
Versa-Lam® LVL 2.1E 3100	1¾	3½	1.8	1,164	1,058	6.3
		5½	2.8	1,829	2,486	24.3
		7¼	3.7	2,411	4,189	55.6
		9¼	4.7	3,076	6,636	115.4
		9½	4.8	3,159	6,979	125.0
		11¼	5.7	3,741	9,605	207.6
		11⅞	6.0	3,948	10,638	244.2
		14	7.1	4,655	14,517	400.2
		16	8.1	5,320	18,682	597.3
		18	9.1	5,985	23,337	850.5
		24	12.2	7,980	40,183	2016.0
	3½	5½	5.6	3,658	4,971	48.5
		7¼	7.4	4,821	8,377	111.1
		9¼	9.4	6,151	13,272	230.8
		9½	9.6	6,318	13,958	250.1
		11¼	11.4	7,481	19,210	415.3
		11⅞	12.1	7,897	21,275	488.4
		14	14.2	9,310	29,035	800.3
		16	16.2	10,640	37,364	1194.7
		18	18.3	11,970	46,674	1701.0
		20	20.3	13,300	56,952	2333.3

Grade	Width [in]	Depth [in]	Weight [lb/ft]	Allowable Shear [lb]	Allowable Moment [ft-lb]	Moment of Inertia [in⁴]
Versa-Lam® LVL 2.1E 3100	5¼	5¼	8.0	5,237	6,830	63.3
		5½	8.4	5,486	7,457	72.8
		7¼	11.0	7,232	12,566	166.7
		9¼	14.1	9,227	19,908	346.3
		9½	14.5	9,476	20,937	375.1
		11¼	17.1	11,222	28,814	622.9
		11⅞	18.1	11,845	31,913	732.6
		14	21.3	13,965	43,552	1200.5
		16	24.4	15,960	56,046	1792.0
		18	27.4	17,955	70,011	2551.5
		20	30.4	19,950	85,428	3500.0
		24	36.5	23,940	120,549	6048.0
	7	9¼	16.6	12,303	26,544	461.7
		9½	17.1	12,635	27,916	500.1
		11¼	20.2	14,963	38,419	830.6
		11⅞	21.4	15,794	42,550	976.8
		14	25.2	18,620	58,069	1600.7
		16	28.8	21,280	74,728	2389.3
		18	32.4	23,940	93,348	3402.0
		20	36.0	26,600	113,904	4666.7
		24	43.2	31,920	160,732	8064.0

Versa-Lam® LVL Allowable Stress Values

Design Property	Grade	Modulus of Elasticity **True** (Shear-Free) E (x 10_6 psi) [1][7]	Modulus of Elasticity **Apparent** E (x 10^6 psi) [1]	Modulus of Elasticity for Stability E_{min} (x 10^6 psi) [1][8]	Bending F_b (psi) [2][3]	Horizontal Shear F_v (psi) [2][4]	Tension Parallel to Grain F_t (psi) [2][5]	Compression Parallel to Grain $F_{c\|\|}$ (psi)[2]	Compression Perpendicular to Grain $F_{c\perp}$ (psi)[1][6]	Equivalent Specific Gravity for Fastener Design (SG)
Versa-Lam® LVL Beams	2.1E 3100	2.1	2.0	1.1	3100	285	2150	3000	750	0.5
Versa-Lam® LVL Studs	1.8E 2650	1.8	1.7	0.9	2650	285	1650	3000	750	0.5
Versa-Lam® LVL Columns	1.8E 2650	1.8	1.7	0.9	2650	285	1650	3000	750	0.5

1. Value cannot be adjusted for load duration.
2. Value is based on 100% load duration and may be adjusted for other load durations.
3. Fiber stress bending value shall be multiplied by the depth factor, $(12/d)^{1/9}$ where d = member depth [in].
4. Stress applied perpendicular to the gluelines.
5. Tension value shall be multiplied by a length factor, $(4/L)^{1/8}$ where L = member length [ft]. Use L = 4 for members less than four feet long.
6. Stress applied parallel to the gluelines.
7. True or shear-free modulus of elasticity does not account for shear deformation.
8. E_{min} is the reference modulus of elasticity for beam and column stability calculations. It is calculated using $E_{apparent}$ in accordance with Appendix D of the 2018 NDS. When calculating E_{min}, the coefficient of modulus of elasticity, COV_E, may be taken as 0.10, and the adjustment factor to convert E to a pure bending basis may be taken as 1.05.

* Design properties are limited to dry conditions of use where the maximum moisture content of the material will not exceed 16%.

Versa-Lam® LVL 1.8 2650 Columns

Column Length [ft]	Allowable Axial Load (lb)														
	3½" x 3½"			3½" x 4⅜"			3½" x 5¼"			3½" x 5½"			3½" x 7"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
4	14,700	16,090	16,930	18,390	20,130	21,180	22,070	24,165	25,430	23,130	25,320	26,640	29,450	32,240	33,920
5	12,270	13,150	13,660	15,350	16,440	17,090	18,425	19,740	20,515	19,300	20,680	21,490	24,580	26,330	27,365
6	10,080	10,650	10,980	12,610	13,320	13,740	15,140	15,995	16,495	15,860	16,750	17,280	20,195	21,335	22,000
7	8,310	8,705	8,930	10,400	10,890	11,170	12,480	13,075	13,415	13,080	13,700	14,050	16,650	17,435	17,890
8	6,930	7,205	7,370	8,660	9,010	9,210	10,405	10,825	11,070	10,900	11,340	11,600	13,880	14,440	14,760
9	5,840	6,050	6,160	7,300	7,560	7,710	8,770	9,080	9,260	9,190	9,510	9,700	11,700	12,115	12,350
10	4,980	5,135	5,225	6,230	6,420	6,540	7,480	7,715	7,850	7,830	8,080	8,220	9,975	10,290	10,470
11	4,290	4,410	4,480	5,360	5,520	5,600	6,445	6,625	6,730	6,750	6,940	7,050	8,595	8,835	8,975
12	3,730	3,825	3,880	4,660	4,780	4,850	5,600	5,745	5,830	5,870	6,020	6,100	7,475	7,665	7,775
13	3,270	3,350	3,390	4,090	4,190	4,240	4,915	5,030	5,095	5,150	5,270	5,340	6,555	6,710	6,795
14	2,890	2,950	2,990	3,610	3,690	3,740	4,340	4,435	4,490	4,550	4,650	4,700	5,790	5,915	5,990
Column Length [ft]	3½" x 7¼"			5¼" x 5¼"			5¼" x 5½"			5¼" x 7"			5¼" x 7¼"		
	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%	100%	115%	125%
4	30,500	33,390	35,130												
5	25,460	27,270	28,340												
6	20,910	22,090	22,780	33,070	36,220	38,110	34,670	37,950	39,930						
7	17,250	18,060	18,530	29,420	31,730	33,085	30,830	33,240	34,660						
8	14,370	14,960	15,290	25,875	27,570	28,565	27,110	28,880	29,930	34,525	36,790	38,115	35,760	38,090	39,480
9	12,120	12,540	12,790	22,690	23,970	24,715	23,770	25,110	25,900	30,275	31,985	32,980	31,360	33,130	34,160
10	10,330	10,660	10,840	19,930	20,920	21,495	20,880	21,920	22,520	26,600	27,920	28,685	27,550	28,920	29,710
11	8,900	9,150	9,300	17,585	18,375	18,820	18,420	19,250	19,720	23,465	24,510	25,125	24,310	25,400	26,010
12	7,740	7,940	8,050	15,590	16,220	16,585	16,340	16,990	17,380	20,805	21,650	22,130	21,550	22,420	22,930
13	6,790	6,950	7,040	13,895	14,410	14,700	14,560	15,100	15,400	18,545	19,225	19,620	19,210	19,920	20,320
14	6,000	6,130	6,200	12,450	12,870	13,115	13,040	13,480	13,740	16,615	17,180	17,500	17,210	17,790	18,130
15				11,210	11,560	11,760	11,740	12,110	12,320	14,960	15,425	15,695	15,490	15,980	16,260
16				10,135	10,430	10,600	10,620	10,930	11,110	13,525	13,920	14,150	14,010	14,420	14,650
17				9,205	9,455	9,600	9,650	9,910	10,060	12,285	12,620	12,810	12,730	13,070	13,270
18				8,395	8,610	8,735	8,800	9,020	9,150	11,205	11,495	11,655	11,610	11,900	12,070
19				7,685	7,870	7,975	8,050	8,250	8,360	10,260	10,505	10,645	10,620	10,880	11,030
20				7,060	7,220	7,310	7,400	7,560	7,660	9,420	9,635	9,760	9,760	9,980	10,110
21				6,505	6,645	6,725	6,820	6,960	7,050	8,680	8,870	8,980	8,990	9,190	9,300
22															

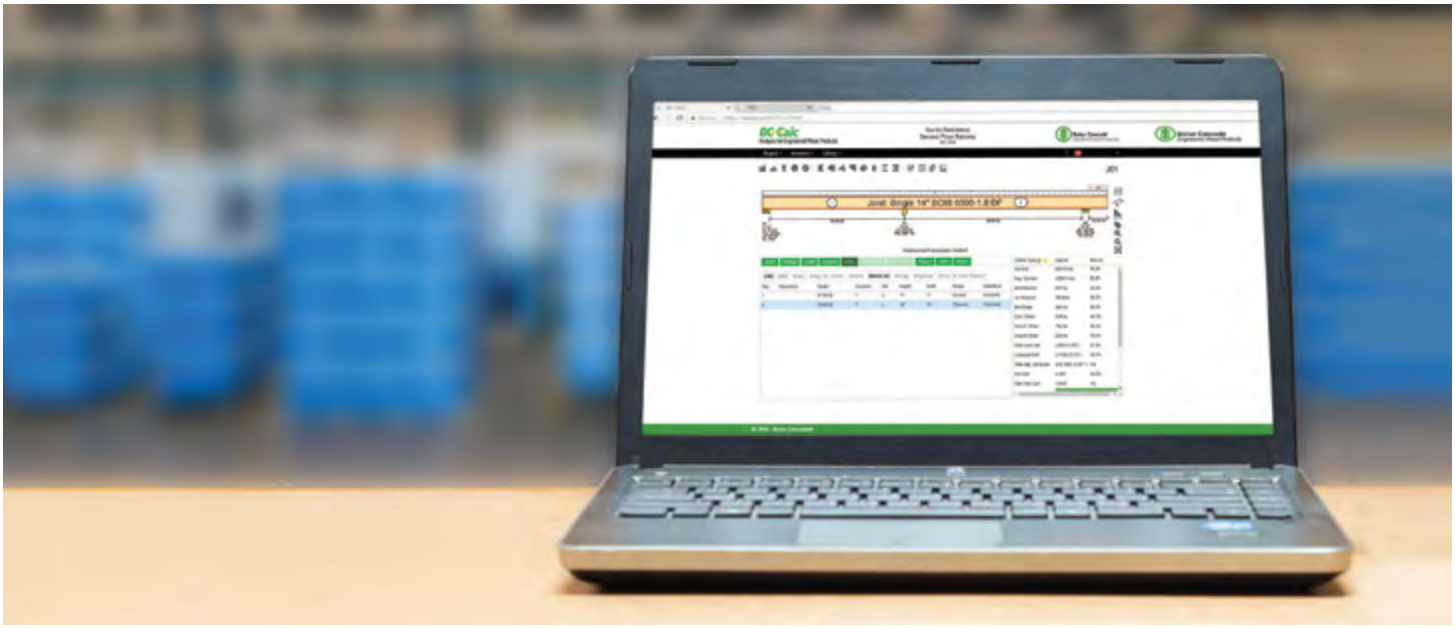
1) Table assumes that the column is braced at column ends only. Effective column length is equal to actual column length.
2) Allowable loads are based upon one-piece (solid) column members used in dry service conditions. BC Calc® sizing software (BCCalc.com) may be used for multi-piece column design.
3) Allowable loads are based on an eccentricity value equal to 0.167 multiplied by either the column thickness or width (worst case).
4) 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.
5) 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).
6) Lateral loads (wind loading) are not considered in this table. BC Calc® sizing software (BCCalc.com) may be used for out of plane lateral load column application design.

Versa-Stud® LVL 1.8E 2650

Reference Design Values					
Product	Bending F_b [psi]	Compression Parallel to Grain F_c [psi]	Compression Perp to Grain $F_{c\perp}$ [psi]	Modulus of Elasticity - **Apparent** E [psi]	Horizontal Shear F_v [psi]
Versa-Stud® 1.8E 2650 1½" x 5½"	**2865**	**3000**	**450**	**1,700,000**	**285**
Spruce Pine Fir (North) # 1 / 2 Grade 2 x 6	1138	1150	425	1,400,000	135
Hem-Fir # 2 Grade 2 x 6	1105	1300	405	1,300,000	150
Western Woods # 2 Grade 2 x 6	878	900	335	1,000,000	135

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

For further design information, please see Versa-Stud 1.8E 2650 Eastern Tall Wall Guide.

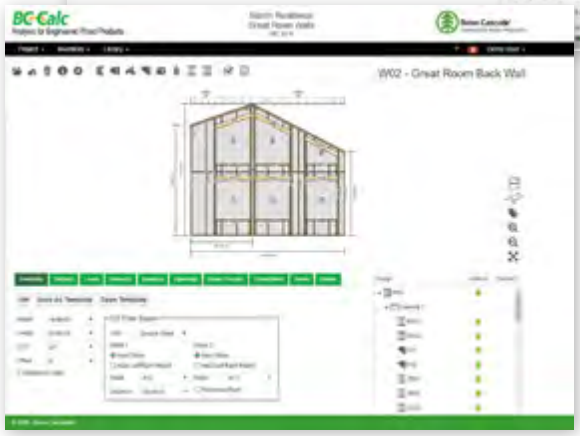


INTEGRATED SOFTWARE FOR EASY SPECIFICATION

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

SOFTWARE BENEFITS

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



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

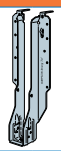
Framing Connectors - Simpson Strong-Tie

Single Joist - Top Flange


ITS

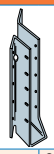
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	ITS1.81/9.5	993	6-10d	-
	5000s	ITS2.06/9.5	993	6-10d	-
	6000s	ITS2.37/9.5	1225	6-10d	
	6500s	ITS2.56/9.5	1225	6-10d	-
11⅞"	4500s	ITS1.81/11.88	1068	6-10d	-
	5000s	ITS2.06/11.88	1068	6-10d	-
	6000s	ITS2.37/11.88	1237	6-10d	-
	6500s	ITS2.56/11.88	1237	6-10d	
	60s	ITS2.37/11.88	1237	6-10d	-
	90s	ITS3.56/11.88	1518	6-10d	-
14"	4500s	ITS1.81/14	1075	6-10d	-
	5000s	ITS2.06/14	1081	6-10d	-
	6000s	ITS2.37/14	1262	6-10d	-
	6500s	ITS2.56/14	1262	6-10d	
	60s	ITS2.37/14	1262	6-10d	-
	90s	ITS3.56/14	1520	6-10d	-
16"	4500s	ITS1.81/16	1081	6-10d	-
	5000s	ITS2.06/16	1087	6-10d	
	6000s	ITS2.37/16	1268	6-10d	-
	6500s	ITS2.56/16	1268	6-10d	
	60s	ITS2.37/16	1268	6-10d	-
	90s	ITS3.56/16	1520	6-10d	-

Single Joist - Face Mount


IUS

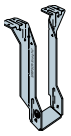
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	IUS1.81/9.5	950	8-10d	-
	5000s	IUS2.06/9.5	950	8-10d	-
	6000s	IUS2.37/9.5	950	8-10d	
	6500s	IUS2.56/9.5	950	8-10d	-
11⅞"	4500s	IUS1.81/11.88	1185	10-10d	-
	5000s	IUS2.06/11.88	1185	10-10d	-
	6000s	IUS2.37/11.88	1185	10-10d	-
	6500s	IUS2.56/11.88	1185	10-10d	
	60s	IUS2.37/11.88	1185	10-10d	-
	90s	IUS3.56/11.88	1420	12-10d	-
14"	4500s	IUS1.81/14	1420	12-10d	-
	5000s	IUS2.06/14	1420	12-10d	-
	6000s	IUS2.37/14	1420	12-10d	-
	6500s	IUS2.56/14	1420	12-10d	
	60s	IUS2.37/14	1420	12-10d	-
	90s	IUS3.56/14	1420	12-10d	-
16"	4500s	IUS1.81/16	1660	14-10d	-
	5000s	IUS2.06/16	1660	14-10d	
	6000s	IUS2.37/16	1660	14-10d	-
	6500s	IUS2.56/16	1660	14-10d	
	60s	IUS2.37/16	1660	14-10d	-
	90s	IUS3.56/16	1425	14-10d	-

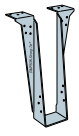
Face Mount Skewed 45° Joist Hanger


SUR/L

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	SUR/L1.81/9	1081	12-16d	2-10dx1½"
	5000s	SUR/L2.06/9	1097	14-16d	2-10dx1½"
	6000s	SUR/L2.37/9	1343	14-16d	2-10dx1½"
	6500s	SUR/L2.56/9	1343	14-16d	2-10dx1½"
11⅞"	4500s	SUR/L1.81/11	1306	16-16d	2-10dx1½"
	5000s	SUR/L2.06/11	1350	16-16d	2-10dx1½"
	6000s	SUR/L2.37/11	1385	16-16d	2-10dx1½"
	6500s	SUR/L2.56/11	1385	16-16d	2-10dx1½"
	60s	SUR/L2.37/11	1385	16-16d	2-10dx1½"
	90s	***SUR/L410***	1906	14-16d	2-10dx1½"
14"	4500s	SUR/L1.81/14	1675	20-16d	2-10dx1½"
	5000s	SUR/L2.06/11	1693	18-16d	2-10dx1½"
	6000s	SUR/L2.37/14	1693	18-16d	2-10dx1½"
	6500s	SURI/L2.56/14	1693	18-16d	2-10dx1½"
	60s	SUR/L2.37/14	1693	18-16d	2-10dx1½"
	90s	***SUR/L414***	2050	18-16d	2-10dx1½"
16"	4500s	***SUR/L1.81/14***	1887	20-16d	2-10dx1½"
	5000s	***SUR/L2.06/11***	1920	18-16d	2-10dx1½"
	6000s	***SUR/L2.37/14***	1920	18-16d	2-10dx1½"
	6500s	***SURI/L2.56/14***	1920	18-16d	2-10dx1½"
	60s	***SUR/L2.37/14***	1920	18-16d	2-10dx1½"
	90s	***SUR/L414***	2250	18-16d	2-10dx1½"

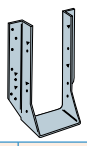
Double Joist - Top Flange

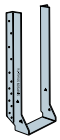

MIT


B

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	***MIT49.5***	2305	8-16d	2-10dx1½"
	5000s	***MIT4.12/9.5***	2305	8-16d	2-10dx1½"
	6000s	***MIT359.5-2***	2305	8-16d	2-10dx1½"
	6500s	***MIT39.5-2***	2305	8-16d	2-10dx1½"
11⅞"	4500s	***MIT411.88***	2305	8-16d	2-10dx1½"
	5000s	***MIT4.12/11.88***	2305	8-16d	2-10dx1½"
	6000s	***MIT3511.88-2***	2305	8-16d	2-10dx1½"
	6500s	***MIT311.88-2***	2305	8-16d	2-10dx1½"
	60s	MIT3511.88-2	2305	8-16d	2-10dx1½"
	90s	***B7.12/11.88***	3800	14-16d	2-10dx1½"
14"	4500s	***MIT414***	2305	8-16d	2-10dx1½"
	5000s	***MIT4.12/14***	2305	8-16d	2-10dx1½"
	6000s	***MIT3514-2***	2305	8-16d	2-10dx1½"
	6500s	***MIT314-2***	2305	8-16d	2-10dx1½"
	60s	MIT3514-2	2305	8-16d	2-10dx1½"
	90s	***B7.12/14***	3800	14-16d	2-10dx1½"
16"	4500s	***MIT416***	2305	8-16d	2-10dx1½"
	5000s	***LBV4.12/16***	2460	10-16d	2-10dx1½"
	6000s	***MIT4.75/16***	2305	8-16d	2-10dx1½"
	6500s	***MIT5.12/16***	2305	8-16d	2-10dx1½"
	60s	MIT4.75/16	2305	8-16d	2-10dx1½"
	90s	***B7.12/16***	3800	14-16d	2-10dx1½"

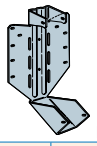
Double Joist - Face Mount


U / HU


MIU

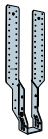
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	***MIU3.56/9***	2305	16-16d	2-10dx1½"
	5000s	***MIU4.12/9***	2305	16-16d	2-10dx1½"
	6000s	***MIU4.75/9***	2305	16-16d	2-10dx1½"
	6500s	***MIU5.12/9***	2305	16-16d	2-10dx1½"
11⅞"	4500s	***MIU3.56/11***	2880	20-16d	2-10dx1½"
	5000s	***MIU4.12/11***	2880	20-16d	2-10dx1½"
	6000s	***MIU4.75/11***	2880	20-16d	2-10dx1½"
	6500s	***MIU5.12/11***	2880	20-16d	2-10dx1½"
	60s	MIU4.75/11	2600	20-16d	2-10dx1½"
	90s	***HU412-2***	3275	22-16d	2-10dx1½"
14"	4500s	***MIU3.56/14***	3170	22-16d	2-10dx1½"
	5000s	***MIU4.12/14***	3170	22-16d	2-10dx1½"
	6000s	***MIU4.75/14***	3170	22-16d	2-10dx1½"
	6500s	***MIU5.12/14***	3170	22-16d	2-10dx1½"
	60s	MIU4.75/14	2700	22-16d	2-10dx1½"
	90s	***HU414-2***	3870	26-16d	2-10dx1½"
16"	4500s	***MIU3.56/16***	3455	24-16d	2-10dx1½"
	5000s	***MIU4.12/16***	3455	24-16d	2-10dx1½"
	6000s	***MIU4.75/16***	3455	24-16d	2-10dx1½"
	6500s	***MIU5.12/16***	3455	24-16d	2-10dx1½"
	60s	MIU4.75/16	2725	24-16d	2-10dx1½"
	90s	***HU414-2***	3780	26-16d	2-10dx1½"

Field Slope and Skew Joist Hanger


LSSU

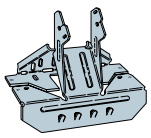
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	***LSSUI25***	995	9-10d	7-10dx1½"
	5000s	***LSSU2.06***	995	9-10d	7-10dx1½"
	6000s	***LSSUI35***	995	9-10d	7-10dx1½"
	6500s	***LSSUH310***	1425	14-10d	7-10dx1½"
11⅞"	4500s	***LSSUI25***	995	9-10d	7-10dx1½"
	5000s	***LSSU2.06***	995	9-10d	7-10dx1½"
	6000s	***LSSUI35***	995	9-10d	7-10dx1½"
	6500s	***LSSUH310***	1475	14-10d	7-10dx1½"
	60s	***LSSUI35***	995	9-10d	7-10dx1½"
	90s	***LSSU410***	1625	14-10d	12-10dx1½"
14"	4500s	***LSSUI25***	995	9-10d	7-10dx1½"
	5000s	***LSSU2.06***	995	9-10d	7-10dx1½"
	6000s	***LSSUI35***	995	9-10d	7-10dx1½"
	6500s	***LSSUH310***	1600	14-10d	7-10dx1½"
	60s	***LSSUI35***	995	9-10d	7-10dx1½"
	90s	***LSSU410***	1625	14-10d	12-10dx1½"

Adjustable Height Joist Hanger


THAI

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	***THAI1.81/22***	1181	6-10d	2-10dx1½"
	5000s	***THAI2.06/22***	1181	6-10d	2-10dx1½"
	6000s	***THAI3522***	1393	6-10d	2-10dx1½"
	6500s	***THAI322***	1393	6-10d	2-10dx1½"
11⅞"	4500s	***THAI1.81/22***	1443	6-10d	2-10dx1½"
	5000s	***THAI2.06/22***	1443	6-10d	2-10dx1½"
	6000s	***THAI3522***	1443	6-10d	2-10dx1½"
	6500s	***THAI322***	1443	6-10d	2-10dx1½"
	60s	***THAI3522***	1443	6-10d	2-10dx1½"
	90s	***THAI422***	1715	6-10d	2-10dx1½"
14"	4500s	***THAI1.81/22***	1600	6-10d	2-10dx1½"
	5000s	***THAI2.06/22***	1600	6-10d	2-10dx1½"
	6000s	***THAI3522***	1600	6-10d	2-10dx1½"
	6500s	***THAI322***	1600	6-10d	2-10dx1½"
	60s	***THAI3522***	1600	6-10d	2-10dx1½"
	90s	***THAI422***	1715	6-10d	2-10dx1½"

Variable Pitch Joist Connector



VPA

Joist Depth	BCI®	Hanger	Capacity [lbs]	Fastener Top Plate	Fastener Rafter
9½"	4500s	LSSUI25	995	9-10d	7-10dx1½"
	5000s	LSSU2.06	995	9-10d	7-10dx1½"
	6000s	LSSUI35	995	9-10d	7-10dx1½"
	6500s	LSSUH310	1425	14-10d	7-10dx1½"
11⅞"	4500s	LSSUI25	995	9-10d	7-10dx1½"
	5000s	LSSU2.06	995	9-10d	7-10dx1½"
	6000s	LSSUI35	995	9-10d	7-10dx1½"
	6500s	LSSUH310	1475	14-10d	7-10dx1½"
	60s	LSSUI35	995	9-10d	7-10dx1½"
	90s	LSSU410	1625	14-10d	12-10dx1½"
14"	4500s	LSSUI25	995	9-10d	7-10dx1½"
	5000s	LSSU2.06	995	9-10d	7-10dx1½"
	6000s	LSSUI35	995	9-10d	7-10dx1½"
	6500s	LSSUH310	1600	14-10d	7-10dx1½"
	60s	LSSUI35	995	9-10d	7-10dx1½"
	90s	LSSU410	1625	14-10d	12-10dx1½"

SIMPSON Strong-Tie® CONNECTORS

For more information, call Simpson Strong-Tie at 1-800-999-5099 or visit their website at www.strongtie.com

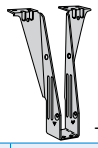
General Notes

- ***Bold Italic hangers require web stiffeners.***
- Capacities will vary with different nailing criteria and/or support conditions; contact supplier or Simpson Strong-Tie for further information.
- Capacity values shown are either hanger capacity values (see support requirements below) or BCI® Joist end reaction capacities — whichever is less.
- All capacity values are downward loads at 100% load duration.
- Use sloped seat hangers and beveled web stiffeners when BCI® Joist slope exceeds ¼" per foot.
- Leave 1/16" clearance (⅛" maximum) between the end of the supported joist and the head of the hanger.
- At max design capacity shown, hangers may exceed standard ⅛" deflection by 1/32".
- For proper installation of the VPA, the 2-10dx1½" joist nails through the bend tabs must be installed at approximately a 45-degree angle.

Support Requirements

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

Single Joist - Top Flange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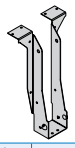
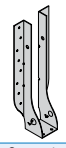

TFL

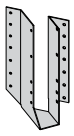
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	THO17950	993	(6) 10d	(2) 10dx1½"
	5000s	TFL2095	993	(6) 10d	(2) 10dx1½"
	6000s	TFL2395	1225	(6) 10d	(2) 10dx1½"
	6500s	TFL2595	1225	(6) 10d	(2) 10dx1½"
11⅞"	4500s	THO17118	1068	(6) 10d	(2) 10dx1½"
	5000s	TFL20118	1068	(6) 10d	(2) 10dx1½"
	6000s	TFL23118	1237	(6) 10d	(2) 10dx1½"
	6500s	TFL25118	1237	(6) 10d	(2) 10dx1½"
	60s	TFL23118	1237	(6) 10d	(2) 10dx1½"
	90s	THO35118	1589	(10) 10d	(2) 10dx1½"
14"	4500s	TFL1714	1075	(6) 10d	(2) 10dx1½"
	5000s	TFL2014	1081	(6) 10d	(2) 10dx1½"
	6000s	TFL2314	1262	(6) 10d	(2) 10dx1½"
	6500s	TFL2514	1262	(6) 10d	(2) 10dx1½"
	60s	TFL2314	1262	(6) 10d	(2) 10dx1½"
	90s	THO35140	1625	(12) 10d	(2) 10dx1½"
16"	4500s	TFL1716	1081	(6) 10d	(2) 10dx1½"
	5000s	TFL2016	1087	(6) 10d	(2) 10dx1½"
	6000s	TFL2316	1268	(6) 10d	(2) 10dx1½"
	6500s	TFL2516	1268	(6) 10d	(2) 10dx1½"
	60s	TFL2316	1268	(6) 10d	(2) 10dx1½"
	90s	THO35160	1660	(12) 10d	(2) 10dx1½"

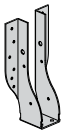
Single Joist - Face Mount


THF

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	IHFL17925	960	(8) 10d	-- --
	5000s	IHFL20925	960	(8) 10d	-- --
	6000s	IHFL23925	960	(8) 10d	-- --
	6500s	IHF26925	1250	(10) 10d	(2) 10dx1½"
11⅞"	4500s	IHFL17112	1187	(10) 10d	-- --
	5000s	IHFL20112	1187	(10) 10d	-- --
	6000s	IHFL2312	1200	(10) 10d	-- --
	6500s	IHF26112	1250	(10) 10d	(2) 10dx1½"
	60s	IHFL2312	1200	(10) 10d	-- --
	90s	IHFL35112	1200	(10) 10d	-- --
14"	4500s	IHFL1714	1200	(12) 10d	-- --
	5000s	IHFL2014	1212	(12) 10d	-- --
	6000s	IHFL2314	1350	(12) 10d	-- --
	6500s	IHF2614	1350	(12) 10d	(2) 10dx1½"
	60s	IHFL2314	1350	(12) 10d	-- --
	90s	IHFL3514	1440	(12) 10d	-- --
16"	4500s	IHFL1714	1212	(14) 10d	-- --
	5000s	IHFL2016	1225	(14) 10d	-- --
	6000s	IHFL2316	1362	(14) 10d	-- --
	6500s	IHF2616	1362	(14) 10d	(2) 10dx1½"
	60s	IHFL2316	1362	(14) 10d	-- --
	90s	IHFL3516	1680	(14) 10d	-- --

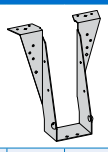
Face Mount Skewed 45° Joist Hanger

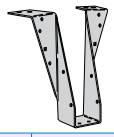

SKH


HD

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	SKH1720L/R	1153	(14) 10d	(10) 10dx1½"
	5000s	SKH2020L/R	1153	(14) 10d	(10) 10dx1½"
	6000s	SKH2320L/R	1384	(14) 10d	(10) 10dx1½"
	6500s	SKH2520L/R	1384	(14) 10d	(10) 10dx1½"
11⅞"	4500s	SKH1720L/R	1434	(14) 10d	(10) 10dx1½"
	5000s	SKH2020L/R	1434	(14) 10d	(10) 10dx1½"
	6000s	SKH2320L/R	1434	(14) 10d	(10) 10dx1½"
	6500s	SKH2520L/R	1434	(14) 10d	(10) 10dx1½"
	60s	SKH2320L/R	1434	(14) 10d	(10) 10dx1½"
	90s	SKH410L/R	1900	(16) 16d	(10) 16d
14"	4500s	SKH1724L/R	1562	(16) 10d	(10) 10dx1½"
	5000s	SKH2024L/R	1562	(16) 10d	(10) 10dx1½"
	6000s	SKH2324L/R	1562	(16) 10d	(10) 10dx1½"
	6500s	SKH2524L/R	1562	(16) 10d	(10) 10dx1½"
	60s	SKH2324L/R	1562	(16) 10d	(10) 10dx1½"
	90s	SKH414L/R	2050	(22) 16d	(10) 16d
16"	4500s	SKH1724L/R	1690	(16) 10d	(10) 10dx1½"
	5000s	SKH2024L/R	1562	(16) 10d	(10) 10dx1½"
	6000s	SKH2324L/R	1690	(16) 10d	(10) 10dx1½"
	6500s	SKH2524L/R	1690	(16) 10d	(10) 10dx1½"
	60s	SKH2324L/R	1690	(16) 10d	(10) 10dx1½"
	90s	SKH414L/R	2250	(22) 16d	(10) 16d

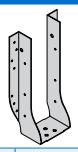
Double Joist - Top Flange

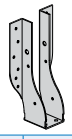

THO Double


BPH

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	THO35950	2050	(10) 10d	(2) 10dx1½"
	5000s	THO20950-2	2330	(10) 16d	(6) 10d
	6000s	THO23950-2	2825	(10) 16d	(6) 10d
	6500s	THO25950-2	2825	(10) 16d	(6) 10d
11⅞"	4500s	THO35118	2050	(10) 10d	(2) 10dx1½"
	5000s	THO20118-2	2330	(10) 16d	(6) 10d
	6000s	THO23118-2	2925	(10) 16d	(6) 10d
	6500s	THO25118-2	2925	(10) 16d	(6) 10d
	60s	THO23118-2	3212	(10) 16d	(6) 10d
	90s	BPH71118	3455	(10) 16d	(6) 10d
14"	4500s	THO35140	2315	(12) 10d	(2) 10dx1½"
	5000s	THO20140-2	2330	(10) 16d	(6) 10d
	6000s	THO23140-2	3350	(12) 16d	(6) 10d
	6500s	THO25140-2	3350	(12) 16d	(6) 10d
	60s	THO23140-2	3535	(12) 16d	(6) 10d
	90s	BPH7114	3455	(10) 16d	(6) 10d
16"	4500s	THO35160	2359	(12) 10d	(2) 10dx1½"
	5000s	THO20160-2	2330	(10) 16d	(6) 10d
	6000s	THO23160-2	3137	(12) 16d	(6) 10d
	6500s	THO25160-2	3137	(12) 16d	(6) 10d
	60s	THO23160-2	3535	(12) 16d	(6) 10d
	90s	BPH7116	3455	(10) 16d	(6) 10d

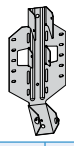
Double Joist - Face Mount


THF Double


HD

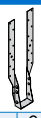
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	IHFL35925	1200	(10) 10d	-- --
	5000s	IHF20925-2	1250	(10) 10d	(2) 10dx1½"
	6000s	IHF23925-2	1250	(10) 10d	(2) 10dx1½"
	6500s	THF25925-2	1250	(10) 10d	(2) 10dx1½"
11⅞"	4500s	IHFL35112	1200	(10) 10d	-- --
	5000s	IHF20112-2	1250	(10) 10d	(2) 10dx1½"
	6000s	THF23118-2	1890	(16) 10d	(6) 10d
	6500s	THF25112-2	1250	(10) 10d	(2) 10dx1½"
	60s	THF23118-2	1890	(16) 10d	(6) 10d
	90s	HD7120	2465	(16) 16d	(6) 10d
14"	4500s	IHFL35112	1440	(12) 10d	-- --
	5000s	IHF2014-2	1500	(12) 10d	(2) 10dx1½"
	6000s	THF23140-2	2660	(20) 10d	(6) 10d
	6500s	THF25140-2	2660	(20) 10d	(6) 10d
	60s	THF23140-2	2660	(20) 10d	(6) 10d
	90s	HD7140	3080	(20) 16d	(8) 10d
16"	4500s	IHFL3516	1680	(22) 10d	(2) 10dx1½"
	5000s	-- --	-- --	-- --	-- --
	6000s	THF23160-2	3175	(24) 10d	(6) 10d
	6500s	HF25160-2	3175	(24) 10d	(6) 10d
	60s	THF23160-2	3190	(24) 10d	(6) 10d
	90s	HD7160	3695	(28) 16d	(8) 10d

Field Slope and Skew Joist Hanger


LSSH

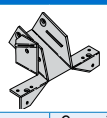
Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1½"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1½"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	6500s	LSSH25	1412	(14) 16d	(12) 10dx1½"
11⅞"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1½"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1½"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	6500s	LSSH23	1462	(14) 16d	(12) 10dx1½"
	60s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	90s	LSSH35	1610	(14) 16d	(12) 10dx1½"
14"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1½"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1½"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	6500s	LSSH23	1610	(14) 16d	(12) 10dx1½"
	60s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	90s	LSSH35	1610	(14) 16d	(12) 10dx1½"
16"	4500s	LSSH179	1200	(10) 10d	(7) 10dx1½"
	5000s	LSSH20	1200	(10) 10d	(7) 10dx1½"
	6000s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	6500s	LSSH23	1610	(14) 16d	(12) 10dx1½"
	60s	LSSH23	1200	(10) 10d	(7) 10dx1½"
	90s	LSSH35	1610	(14) 16d	(12) 10dx1½"

Adjustable Height Joist Hanger (Single)


MSH

Joist Depth	BCI®	Hanger	Capacity [lbs]	Nailing Header	Nailing Joist
9½"	4500s	MSH1722 (9)	1143	(6) 10d	(4) 10dx1½"
	5000s	MSH2022 (9)	1143	(6) 10d	(4)10d
	6000s	MSH2322 (9)	1381	(6) 10d	(4) 10dx1½"
	6500s	MSH322 (9)	1381	(6) 10d	(4) 10dx1½"
11⅞"	4500s	MSH1722	1431	(6) 10d	(4) 10dx1½"
	5000s	MSH2022	1431	(6) 10d	(4)10d
	6000s	MSH2322	1431	(6) 10d	(4) 10dx1½"
	6500s	MSH322	1431	(6) 10d	(4) 10dx1½"
	60s	MSH2322	1431	(6) 10d	(4) 10dx1½"
	90s	MSH422	1862	(6) 10d	(6)10d
14"	4500s	MSH1722	1550	(6) 10d	(4) 10dx1½"
	5000s	MSH2022	1550	(6) 10d	(4)10d
	6000s	MSH2322	1550	(6) 10d	(4) 10dx1½"
	6500s	MSH322	1550	(6) 10d	(4) 10dx1½"
	60s	MSH2322	1550	(6) 10d	(4) 10dx1½"
	90s	MSH422	1975	(6) 10d	(6)10d
16"	4500s	MSH1722	1668	(6) 10d	(4) 10dx1½"
	5000s	MSH2022	1668	(6) 10d	(4)10d
	6000s	MSH2322	1668	(6) 10d	(4) 10dx1½"
	6500s	MSH322	1668	(6) 10d	(4) 10dx1½"
	60s	MSH2322	1712	(6) 10d	(4) 10dx1½"
	90s	MSH422	2175	(6) 10d	(6)10d

Variable Pitch Joist Connector


TMP

Joist Depth	BCI®	Hanger	Capacity [lbs]	Fastener Top Plate	Fastener Rafter
9½"	4500s	TMP175	1125	(6) 10d	(4) 10dx1½"
	5000s	TMP21	1125	(6) 10d	(4) 10dx1½"
	6000s	TMP23	1375	(6) 10d	(4) 10dx1½"
	6500s	TMP25	1375	(6) 10d	(4) 10dx1½"
11⅞"	4500s	TMP175	1425	(6) 10d	(4) 10dx1½"
	5000s	TMP21	1425	(6) 10d	(4) 10dx1½"
	6000s	TMP23	1425	(6) 10d	(4) 10dx1½"
	6500s	TMP25	1425	(6) 10d	(4) 10dx1½"
	60s	TMP23	1425	(6) 10d	(4) 10dx1½"
	90s	TMP4	1705	(6) 10d	(4) 10dx1½"
14"	4500s	TMP175	1450	(6) 10d	(4) 10dx1½"
	5000s	TMP21	1475	(6) 10d	(4) 10dx1½"
	6000s	TMP23	1525	(6) 10d	(4) 10dx1½"
	6500s	TMP25	1525	(6) 10d	(4) 10dx1½"
	60s	TMP23	1525	(6) 10d	(4) 10dx1½"
	90s	TMP4	1705	(6) 10d	(4) 10dx1½"
16"	4500s	TMP175	1450	(6) 10d	(4) 10dx1½"
	5000s	TMP21	1500	(6) 10d	(4) 10dx1½"
	6000s	TMP23	1550	(6) 10d	(4) 10dx1½"
	6500s	TMP25	1550	(6) 10d	(4) 10dx1½"
	60s	TMP23	1550	(6) 10d	(4) 10dx1½"
	90s	TMP4	1705	(6) 10d	(4) 10dx1½"

MiTek®

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

General Notes

- *Shaded hangers required web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by Boise Cascade.*
- Capacities will vary with different nailing criteria and/or support conditions: contact supplier or MiTek Structural Connectors for further information.
- Capacity values shown are either hanger capacity values (see support requirements below) or BCI® Joist end reaction capacities — whichever is less.
- All capacity values are downward loads at 100% load duration.
- Use sloped seat hangers and beveled web stiffeners when BCI® Joist slope exceeds ¼" per foot.
- Leave 1/16" clearance (1/8" maximum) between the end of the supported joist and the head of the hanger.
- For BCI® Joist applications, consult MiTek for capacity reduction.

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

Support Requirements

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

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ENGINEERED WOOD PRODUCTS

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

DEALER CONTACT

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