

**LIMIT STATES DESIGN
CANADA**



ALLJoist[®] **SPECIFIER GUIDE**

INCLUDES AJS[®] 140 / 20 / 25

CCMC Report Number
12787-R ALLJOIST[®]

**High Performance
Floor & Roof Systems**



Boise Cascade
Engineered Wood Products

Makes Designing Homes Easier

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

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 **AJS® 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 ALLJOIST® Product

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

☑ Ceilings Framed with **AJS® Joists**

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

☑ **VERSA-LAM® 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 **BC RIM BOARD® OSB**, **BC RIM BOARD®** and **VERSA-RIM®** (check supplier or Boise Cascade EWP representative for availability). These products work with **AJS® Joists** to provide a solid connection at the critical floor/wall intersection.

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

Materials: AJS® Joists shall be manufactured by Boise Cascade Engineered Wood Products with oriented strand board webs, machine stress rated (MSR) lumber flanges and waterproof, structural adhesives.

Joist webs shall be rated Structural I Exposure 1 by an agency listed by a model code evaluation service. 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 AJS® Joists shall be sized and detailed to fit the dimensions and loads indicated on the plans. All designs shall be in accordance with allowable values and section properties developed in accordance with ASTM D5055, CSA O86, and listed under a CCMC product evaluation.

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 AJS® 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 AJS® 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 AJS® 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 AJS® Joists straight and plumb as required and to assure adequate lateral support for the individual AJS® Joists and the entire system until the sheathing material has been applied.

Codes: The AJS® Joists shall be evaluated by the CCMC evaluation service.

Lifetime Guaranteed Quality and Performance

Boise Cascade warrants its BCI® Joist, VERSA-LAM®, 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.

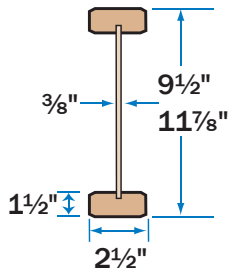
For information about
Boise Cascade's engineered wood products,
including sales terms and conditions, warranties and disclaimers,
visit our website at
www.BC.com/ewp

BOISE CASCADE IS CERTIFIED BY SFI, AMERICA'S LEADING FORESTRY CERTIFICATION PROGRAM:

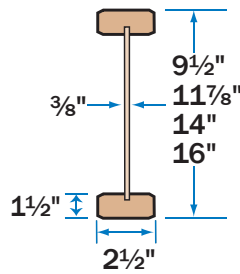
Boise Cascade doesn't own forests, but buys wood fiber in compliance with SFI, the Sustainable Forestry Initiative®, which certifies the dominant share of North American forest acreage -- 160+ million acres. Boise Cascade is an SFI chain-of-custody certified national supplier. Chain-of-custody tracks and records possession and transfer of wood fiber from forest of origin through all stages of distribution and production to the homebuilder. Chain-of-custody assures that Boise Cascade products are made using fiber from responsibly-managed forests and not from areas that are illegally harvested, major tropical wilderness areas or biodiversity hotspots. Boise Cascade's computerized chain-of-custody system documents sourcing of all wood fiber purchased, ensuring that none gets into Boise Cascade inventory unless it comes from acceptable sources.



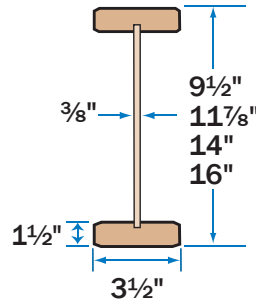
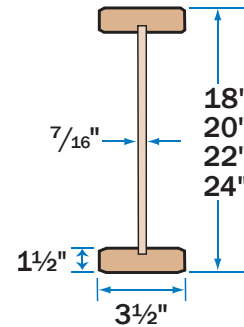
AJS® 140



AJS® 20



AJS® 25

AJS® 25
Deeper Depths

Factored Resistances

Limit States Design (CANADA)

AJS® Joist Series	Joist Depth [in]	Factored Moment Resistance [lbs-ft]	Factored Shear Resistance [lbs]	Joist Stiffness EI [x10 ⁶ lbs-in ²]	Shear Deformation Coefficient, K [x10 ⁶ lbs]	Joist Weight [lbs/ft]	Factored End Bearing Resistance (lbs)		Factored Intermediate Bearing Resistance (lbs)	
							1½" Min. Bearing Length ⁽²⁾		3½" Min. Bearing Length	
							No Web Stiffeners [lbs]	WITH Web Stiffeners [lbs]	No Web Stiffeners [lbs]	WITH Web Stiffeners [lbs]
AJS® 140	9½	4095	1830	182	5.2	2.2	1500	1955	3705	3865
	11⅞	5305	2350	311	6.6	2.5	1505	2105	3770	4415
AJS® 20	9½	5675	1830	232	5.2	2.5	1500	1955	3705	3865
	11⅞	7350	2350	394	6.6	2.8	1505	2105	3770	4415
	14	8850	2825	579	7.8	3.0	1515	2240	3835	4940
	16	10265	3255	789	8.9	3.3	1530	2365	3890	5420
AJS® 25	9½	8935	1830	322	5.3	3.1	1500	1955	4100	4495
	11⅞	11575	2350	545	6.7	3.4	1505	2105	4245	5035
	14	13940	2825	798	7.9	3.7	1515	2240	4370	5520
	16	16165	3255	1082	9.1	3.9	1530	2365	4495	5995
	18 ⁽³⁾	18260	4750	1427	12.3	4.6	--	3535	--	7450
	20 ⁽³⁾	20405	5110	1813	13.7	4.9	--	3930	--	8065
	22 ⁽³⁾	22375	5475	2249	15.0	5.1	--	3930	--	8255
	24 ⁽³⁾	24325	5820	2738	16.5	5.4	--	3930	--	8435

NOTES:

- (1) All resistance factors, as per CSA O86 have been applied.
- (2) Minimum end bearing length is 1½" for 9½" to 16" depths and 1¾" for 18" and deeper.
- (3) AJS® Joists deeper than 16" require web stiffeners at all bearing locations.
- (4) The AJS® Joist deflection under uniform load may be calculated with the equation to the right:

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

Δ	=	Deflection [in]
w	=	Uniform load [lb/in]
l	=	Centerline to centerline [in]
EI	=	Stiffness value from table [lb-in ²]
K	=	Shear deflection factor from table [lb]

About Floor Performance

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

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

5/8" Subfloor (Nailed)													
Live Load: 40 psf		Simple Span						Continuous Span					
Dead Load: 15 psf		Bare Joist			Applied 1/2" Gypsum Ceiling			Bare Joist			Applied 1/2" Gypsum Ceiling		
Joist Series	Depth [in]	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"
AJS® 140	9½	14'-7"	13'-7"	13'-1"	15'-0"	14'-0"	13'-5"	15'-10"	14'-9"	14'-2"	16'-3"	15'-2"	14'-7"
	11½	16'-5"	15'-4"	14'-9"	16'-11"	15'-9"	15'-2"	17'-10"	16'-8"	16'-0"	18'-5"	17'-2"	16'-5"
AJS® 20	9½	15'-4"	14'-4"	13'-9"	15'-9"	14'-8"	14'-1"	16'-8"	15'-6"	14'-11"	17'-1"	15'-11"	15'-3"
	11½	17'-4"	16'-2"	15'-6"	17'-9"	16'-6"	15'-10"	18'-11"	17'-6"	16'-10"	19'-7"	17'-11"	17'-3"
	14	19'-1"	17'-7"	16'-10"	19'-8"	18'-1"	17'-4"	21'-2"	19'-4"	18'-5"	21'-10"	20'-0"	19'-0"
	16	20'-10"	19'-1"	18'-1"	21'-6"	19'-8"	18'-8"	23'-1"	21'-2"	20'-1"	23'-10"	21'-11"	20'-9"
AJS® 25	9½	16'-5"	15'-4"	14'-9"	16'-10"	15'-8"	15'-0"	17'-10"	16'-8"	16'-0"	18'-3"	17'-0"	16'-4"
	11½	18'-8"	17'-3"	16'-7"	19'-2"	17'-8"	16'-11"	20'-8"	18'-11"	18'-0"	21'-3"	19'-6"	18'-6"
	14	20'-9"	19'-0"	18'-0"	21'-4"	19'-6"	18'-6"	23'-1"	21'-1"	20'-0"	23'-9"	21'-9"	20'-7"
	16	22'-8"	20'-8"	19'-8"	23'-4"	21'-4"	20'-3"	25'-2"	23'-0"	21'-10"	25'-11"	23'-9"	22'-6"
	18	24'-9"	22'-7"	21'-5"	25'-5"	23'-3"	22'-1"	27'-4"	25'-1"	23'-9"	28'-2"	25'-10"	24'-6"
	20	26'-6"	24'-2"	22'-11"	27'-2"	24'-11"	23'-8"	29'-4"	26'-10"	25'-5"	30'-2"	27'-8"	26'-3"
	22	28'-2"	25'-9"	24'-5"	28'-11"	26'-6"	25'-2"	31'-2"	28'-6"	27'-1"	32'-1"	29'-5"	27'-11"
	24	29'-9"	27'-2"	25'-10"	30'-7"	28'-1"	26'-8"	33'-2"	30'-2"	28'-8"	34'-5"	31'-2"	29'-7"

NOTES:

- Tables are based on a uniform 40 psf live load and 15 psf dead load (Standard Term Load Duration).
- Floor tile will increase dead load and may require specific deflection limits.
- Minimum end bearing length is 1½" for 9½" to 16" depths and 1¾" for 18" to 24".
- Stiffeners required at **ALL** bearing locations for all 18" to 24" deep joists (end bearing, interior bearing, and concentrated load locations).
- Maximum spans are measured in **between the supports** (clearspan) and are based on uniformly loaded joists.
- Live load deflection is limited to L/360 and Total load deflection to L/240. Deflections are based on the bare joist stiffness.
- Spans shown are in accordance with NBCC2005: Part 9, and standard CAN-CSA O86-01.
- When using continuous spans over an intermediate bearing, the shortest span shall not be less than 50% of the longest adjacent span. For other conditions, please contact your distributor or Boise Cascade EWP for assistance.
- It may be possible to exceed the limitations of these tables by analyzing a specific application with the Boise Cascade EWP's BC CALC® software and Boise Cascade WoodSizer software.
- The subfloor shall be CSA-rated Oriented Strand Board (OSB), Canadian Softwood Plywood (CSP), or Douglas Fir Plywood (DFP).

¾" Subfloor (Nailed)													
Live Load: 40 psf		Simple Span						Continuous Span					
Dead Load: 15 psf		Bare Joist			Applied 1/2" Gypsum Ceiling			Bare Joist			Applied 1/2" Gypsum Ceiling		
Joist Series	Depth [in]	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"
AJS® 140	9½	15'-3"	14'-3"	13'-7"	15'-7"	14'-7"	13'-11"	16'-6"	15'-5"	14'-9"	16'-11"	15'-10"	15'-2"
	11½	17'-2"	16'-0"	15'-4"	17'-7"	16'-5"	15'-9"	18'-9"	17'-4"	16'-8"	19'-5"	17'-10"	17'-1"
AJS® 20	9½	16'-1"	15'-0"	14'-4"	16'-5"	15'-3"	14'-8"	17'-5"	16'-3"	15'-6"	17'-9"	16'-7"	15'-11"
	11½	18'-1"	16'-10"	16'-1"	18'-7"	17'-3"	16'-6"	20'-0"	18'-4"	17'-6"	20'-7"	18'-11"	17'-11"
	14	20'-2"	18'-5"	17'-7"	20'-9"	19'-0"	18'-0"	22'-4"	20'-5"	19'-4"	23'-0"	21'-1"	20'-0"
	16	22'-1"	20'-2"	19'-0"	22'-8"	20'-9"	19'-8"	24'-5"	22'-4"	21'-2"	25'-1"	23'-1"	21'-10"
AJS® 25	9½	17'-2"	16'-0"	15'-4"	17'-6"	16'-4"	15'-7"	18'-10"	17'-5"	16'-8"	19'-3"	17'-9"	17'-0"
	11½	19'-9"	18'-0"	17'-3"	20'-2"	18'-5"	17'-7"	21'-10"	20'-0"	18'-11"	22'-5"	20'-6"	19'-5"
	14	22'-0"	20'-1"	19'-0"	22'-6"	20'-7"	19'-6"	24'-4"	22'-3"	21'-1"	25'-0"	22'-11"	21'-8"
	16	24'-0"	21'-11"	20'-8"	24'-7"	22'-6"	21'-3"	26'-7"	24'-4"	23'-0"	27'-3"	25'-0"	23'-8"
	18	26'-2"	23'-11"	22'-7"	26'-9"	24'-6"	23'-2"	28'-11"	26'-6"	25'-1"	29'-7"	27'-2"	25'-9"
	20	28'-0"	25'-7"	24'-2"	28'-7"	26'-3"	24'-10"	31'-0"	28'-4"	26'-10"	31'-9"	29'-2"	27'-7"
	22	29'-9"	27'-2"	25'-8"	30'-5"	27'-11"	26'-5"	33'-1"	30'-2"	28'-6"	34'-2"	31'-0"	29'-4"
	24	31'-6"	28'-9"	27'-2"	32'-2"	29'-7"	28'-0"	35'-8"	31'-11"	30'-2"	36'-10"	32'-11"	31'-1"

WARNING: Use of Span Tables for Commercial Projects (NBCC2005: Part 4)

All projects within the scope of Part 4 of the National Building Code of Canada (NBCC) must consider the effects of concentrated loads, as stipulated in article 4.1.5.10. The designer of record must verify the effects of a concentrated load on the joists on all projects within the scope of Part 4 of NBCC (2005). Table 4.1.5.10 in NBCC (2005) lists concentrated loads that shall be analyzed with respect to the intended use of the floor. Given the numerous possible permutations, the span tables listed above do not take the effects of concentrated loads into consideration.

About Floor Performance

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

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

5/8" Subfloor (Glued & Nailed)													
Live Load: 40 psf		Simple Span						Continuous Span					
Dead Load: 15 psf		Bare Joist			Applied 1/2" Gypsum Ceiling			Bare Joist			Applied 1/2" Gypsum Ceiling		
Joist Series	Depth [in]	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"
AJS® 140	9½	15'-7"	14'-9"	14'-3"	16'-0"	15'-2"	14'-8"	16'-10"	15'-11"	15'-5"	17'-4"	16'-5"	15'-11"
	11⅞	17'-6"	16'-6"	16'-0"	18'-0"	17'-0"	16'-5"	19'-2"	17'-10"	17'-3"	19'-11"	18'-6"	17'-10"
AJS® 20	9½	16'-3"	15'-4"	14'-10"	16'-8"	15'-9"	15'-2"	17'-7"	16'-7"	16'-0"	18'-1"	17'-1"	16'-6"
	11⅞	18'-3"	17'-2"	16'-7"	18'-10"	17'-8"	17'-0"	20'-2"	18'-9"	18'-0"	20'-11"	19'-5"	18'-7"
	14	20'-3"	18'-10"	18'-0"	21'-0"	19'-6"	18'-8"	22'-6"	20'-10"	19'-11"	23'-3"	21'-7"	20'-8"
	16	22'-1"	20'-6"	19'-7"	22'-10"	21'-3"	20'-4"	24'-6"	22'-8"	21'-8"	25'-4"	23'-7"	22'-7"
AJS® 25	9½	17'-3"	16'-2"	15'-8"	17'-7"	16'-7"	16'-0"	18'-10"	17'-7"	16'-11"	19'-4"	18'-0"	17'-4"
	11⅞	19'-8"	18'-2"	17'-6"	20'-2"	18'-8"	17'-11"	21'-9"	20'-2"	19'-3"	22'-5"	20'-9"	19'-10"
	14	21'-10"	20'-2"	19'-3"	22'-6"	20'-10"	19'-10"	24'-2"	22'-4"	21'-4"	24'-11"	23'-1"	22'-1"
	16	23'-9"	21'-11"	21'-0"	24'-6"	22'-8"	21'-8"	26'-4"	24'-4"	23'-3"	27'-2"	25'-2"	24'-0"
	18	25'-10"	23'-10"	22'-9"	26'-7"	24'-7"	23'-6"	28'-7"	26'-5"	25'-3"	29'-5"	27'-3"	26'-1"
	20	27'-7"	25'-6"	24'-4"	28'-5"	26'-4"	25'-2"	30'-7"	28'-3"	26'-11"	31'-6"	29'-2"	27'-11"
	22	29'-4"	27'-1"	25'-10"	30'-2"	27'-11"	26'-8"	32'-6"	30'-0"	28'-7"	33'-9"	31'-0"	29'-7"
	24	31'-0"	28'-7"	27'-4"	31'-11"	29'-7"	28'-3"	34'-11"	31'-8"	30'-3"	36'-4"	32'-10"	31'-4"

NOTES:

- Tables are based on a uniform 40 psf live load and 15 psf dead load (Standard Term Load Duration).
- Floor tile will increase dead load and may require specific deflection limits.
- Minimum end bearing length is 1½" for 9½" to 16" depths and 1¼" for 18" to 24".
- Stiffeners required at **ALL** bearing locations for all 18" to 24" deep joists (end bearing, interior bearing, and concentrated load locations).
- Maximum spans are measured in **between the supports** (clearspan) and are based on uniformly loaded joists.
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- Spans shown are in accordance with NBCC2005: Part 9, and standard CAN-CSA O86-01.
- When using continuous spans over an intermediate bearing, the shortest span shall not be less than 50% of the longest adjacent span. For other conditions, please contact your distributor or Boise Cascade EWP, for assistance.
- It may be possible to exceed the limitations of these tables by analyzing a specific application with the Boise Cascade BC CALC® software and Boise Cascade WoodSizer software.
- The subfloor shall be CSA rated Oriented Strand Board (OSB), Canadian Softwood Plywood (CSP), or Douglas Fir Plywood (DFP).
- Subfloor adhesive shall comply with CGSB standard CAN-CGSB 71.26-M88 "Adhesives for Field-gluing Plywood to Lumber Framing for Floor Systems" or APA Performance Specification AFG-01.

¾" Subfloor (Glued & Nailed)													
Live Load: 40 psf		Simple Span						Continuous Span					
Dead Load: 15 psf		Bare Joist			Applied 1/2" Gypsum Ceiling			Bare Joist			Applied 1/2" Gypsum Ceiling		
Joist Series	Depth [in]	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"	12"	16"	19.2"
AJS® 140	9½	16'-7"	15'-7"	15'-1"	17'-0"	16'-0"	15'-6"	17'-11"	16'-11"	15'-10"	18'-6"	17'-5"	15'-10"
	11⅞	18'-8"	17'-6"	16'-10"	19'-3"	18'-0"	17'-4"	20'-7"	19'-2"	18'-3"	21'-4"	19'-11"	18'-1"
AJS® 20	9½	17'-3"	16'-3"	15'-8"	17'-7"	16'-7"	16'-0"	18'-9"	17'-7"	16'-11"	19'-4"	18'-0"	17'-4"
	11⅞	19'-7"	18'-2"	17'-6"	20'-2"	18'-9"	17'-11"	21'-8"	20'-1"	19'-2"	22'-4"	20'-10"	19'-10"
	14	21'-10"	20'-2"	19'-3"	22'-5"	20'-10"	19'-11"	24'-1"	22'-4"	21'-4"	24'-10"	23'-1"	22'-1"
	16	23'-9"	22'-0"	20'-11"	24'-5"	22'-9"	21'-8"	26'-3"	24'-4"	23'-2"	27'-1"	25'-2"	24'-1"
AJS® 25	9½	18'-3"	17'-2"	16'-6"	18'-8"	17'-6"	16'-10"	20'-2"	18'-8"	17'-11"	20'-8"	19'-2"	18'-4"
	11⅞	21'-1"	19'-6"	18'-7"	21'-7"	20'-0"	19'-1"	23'-4"	21'-7"	20'-7"	23'-11"	22'-2"	21'-2"
	14	23'-5"	21'-8"	20'-7"	24'-0"	22'-3"	21'-2"	25'-11"	23'-11"	22'-10"	26'-7"	24'-8"	23'-6"
	16	25'-6"	23'-6"	22'-5"	26'-1"	24'-2"	23'-1"	28'-2"	26'-1"	24'-8"	28'-11"	26'-10"	24'-8"
	18	27'-7"	25'-6"	24'-4"	28'-4"	26'-3"	25'-0"	30'-7"	28'-3"	26'-11"	31'-4"	29'-1"	27'-9"
	20	29'-6"	27'-3"	26'-0"	30'-3"	28'-1"	26'-9"	32'-8"	30'-2"	28'-9"	33'-10"	31'-1"	29'-8"
	22	31'-4"	29'-0"	27'-7"	32'-2"	29'-10"	28'-5"	35'-5"	32'-1"	30'-6"	36'-7"	33'-2"	31'-6"
	24	33'-4"	30'-7"	29'-1"	34'-5"	31'-6"	30'-0"	38'-1"	34'-4"	32'-3"	39'-5"	35'-9"	33'-6"

WARNING: Use of Span Tables for Commercial Projects (NBCC2005: Part 4)

All projects within the scope of Part 4 of the National Building Code of Canada (NBCC) must consider the effects of concentrated loads, as stipulated in article 4.1.5.10. The designer of record must verify the effects of a concentrated load on the joists on all projects within the scope of Part 4 of NBCC (2005). Table 4.1.5.10 in NBCC (2005) lists concentrated loads that shall be analyzed with respect to the intended use of the floor. Given the numerous possible permutations, the span tables listed above do not take the effects of concentrated loads into consideration.

AJS® 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 ALLJOIST® PRODUCT

FOR INSTALLATION STABILITY,
Temporary strut lines (1x4 min.) 8' on center max. Fasten at each joist with 2-2½" (8d) nails minimum.

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

AJS® rim joist. See page 8.

Boise Rimboard. See pages 8 & 20.

For load bearing cantilever details, see page 12 & 13.

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

VERSA-LAM® header or an AJS® header.

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

See page 10 & 11 for allowable hole sizes and location.

VERSA-LAM® LVL beam.

Endwall blocking as required per governing building code.

AJS® Blocking is required when joists are cantilevered.

BCI® Joists, VERSA-LAM® 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®, ALLJOIST®, and BCI® Joists must be wrapped, covered, and stored off of the ground on stickers at all times prior to installation. VERSA-LAM®, 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®, 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 AJS® JOISTS UNTIL ALL HANGERS, AJS® RIM JOISTS, RIM BOARDS, AJS® 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 AJS® Joist and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of AJS® Joist at the end of the bay.
- All hangers, AJS® rim joists, rim boards, AJS® blocking panels, and x-bracing must be completely installed and properly nailed as each AJS® Joist is set.
- Install temporary 1x4 strut lines at no more than eight feet on center as additional AJS® Joists are set. Nail the strut lines to the sheathed area, or braced end wall, and to each AJS® Joist with 2-2½" (8d) nails.
- The ends of cantilevers must be temporarily secured by strut lines on both the top and bottom flanges.
- Straighten the AJS® Joist 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 AJS® Joist spans, contact Boise Cascade EWP Engineering for proper storage and shoring information.



END BEARING DETAILS

F07

Nail Boise Rimboard to AJS® Joists with 2½" (8d) nail into each flange.

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

F07A

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

F01

AJS® 25 requires 2x6 wall for minimum bearing.

F02

AJS® rim joist.

AJS® 25 requires 2x6 wall for minimum bearing.

F27A

Top Flange or Face Mount Joist Hanger

VERSA-LAM®

F52

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

1½" minimum bearing length

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

F08

Solid block all posts from above to bearing below.

F03

AJS® rim joist

AJS® 25 requires 2x6 wall for minimum bearing.

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

INTERMEDIATE BEARING DETAILS

F06

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

AJS® Joist blocking.

F09

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

1/16" gap

2x block.

Load bearing wall above (stacked over wall below)

Nail block with one 3" (10d) nail into each flange.

Size	Double Squash Block Vertical Load (lb/ft)			
	Joist Spacing (in)			
	12	16	19.2	24
2x4	8160	6120	5100	4080
2x6	10140	7600	6330	5070

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.

Joist blocking may be required in seismic areas for floor diaphragm strength.

AJS® Joist or Boise Rimboard Blocking.

Intermediate Bearing.

Cross bracing OK as blocking only if support below is not a braced wall panel or shear wall and no wall exists above.

F10

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

Joist Hanger

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

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

F58

Double AJS® Joist Connection

Filler Block (see chart below)

Web-Filler Nailing 12" on-center

Connection valid for all applications. Contact Boise Cascade EWP Engineering for specific conditions.

F05

Sheathing or rimboard closure

AJS® blocking required for cantilever.

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

AJS® RIM JOISTS AND BLOCKING

Joist Depth	Vertical Load Transfer Capacity (plf)
9½"	2950
11⅞"	2650
14"	2350
16"	2100
18" - 20"	5100 ⁽¹⁾
22" - 24"	4250 ⁽¹⁾

1) Web stiffeners required at each end of blocking panel. Distance between stiffeners must be less than 24".

LATERAL SUPPORT

- AJS® Joists must be laterally supported at the ends with hangers, AJS® rim joists, rim boards, AJS® blocking panels or x-bracing. AJS® blocking panels or x-bracing are required at cantilever supports.
- Blocking may be required at intermediate bearings for floor diaphragm as per Code, consult local building official.

MINIMUM BEARING LENGTH FOR AJS® JOISTS

- 1½ inches is required at end supports (1¼ inches for 18" to 24" deep). 3½ inches 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

- AJS® rim joist, rim board or closure panel to AJS® Joist:
 - Rims or closure panel 1¼ inches thick and less: 2-2½" (8d) nails, one each in the top and bottom flange.
 - AJS® 140/20 rim joist: 2-3½" (16d) box nails, one each in the top and bottom flange.

- AJS® 25 rim joist: Toe-nail top flange to rim joist with 2-10d box nails, one each side of flange.
- AJS® rim joist, rim board or AJS® blocking panel to support
 - 2½" (8d) nails at 6 inches on center.
 - When used for shear transfer, follow the building designer's specification.
- AJS® Joist to support:
 - 2-2½" (8d) nails, one on each side of the web, placed 1½ inches minimum from the end of the AJS® Joist to limit splitting.
- Sheathing to AJS® Joist:
 - Prescriptive residential floor sheathing nailing requires 2½" (8d) common nails @ 6" o.c. on edges and @ 12" o.c. in the field as per Code.
 - Maximum nail spacing for minimum lateral stability = 24".
 - 14 gauge staples may be substituted for 2½" (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
AJS® 140	1⅞" or two ½" wood panels	2 x ___ + ⅝" wood panel
AJS® 20	1⅞" or two ½" wood panels	2 x ___ + ⅝" wood panel
AJS® 25	2 x _ lumber	Double 2 x ___ lumber

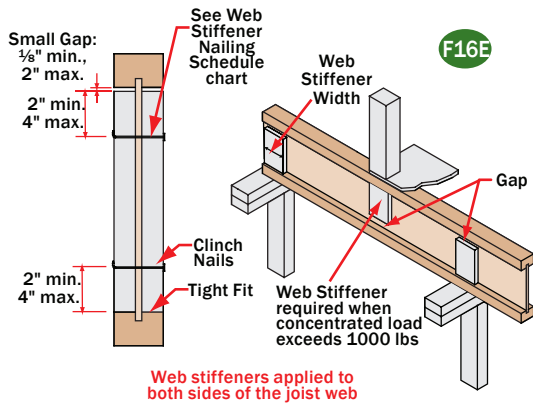
- Cut backer and filler blocks to a maximum depth equal to the web depth minus ¼" to avoid a forced fit.
- For deeper AJS® 25 Joists, stack 2x lumber or use multiple pieces of ¾" wood panels.

WEB STIFFENER REQUIREMENTS

- See Web Stiffener Requirements on page 9.

PROTECT AJS® JOISTS FROM THE WEATHER

- AJS® Joists is 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.



Web Stiffener Specifications

Series	For Structural Capacity (Min. Thick)	Lateral Restraint in Hanger	Minimum Width
AJS® 140/20	1½"	1"	2 ⁵ / ₁₆ "
AJS® 25	2x4 lumber (vertical)		

Web Stiffener Nailing Schedule

ALLJOIST® Series	Joist Depth	Nailing
AJS® 140 / 20 / 25	9½" – 11⅝"	3-3" (10d)
	14" – 24"	5-3" (10d)

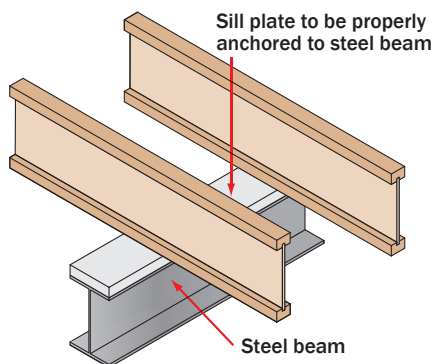
NOTES:

Web stiffeners are optional except as noted below:

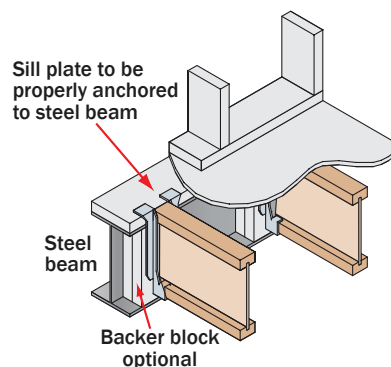
- Stiffeners required at **ALL** bearing locations for all 18" to 24" deep joists.
- Web stiffeners are always required in hangers that do not extend up to support the top flange of the AJS® Joist. Web stiffeners may be required with certain sloped or skewed hangers or to achieve uplift values. Refer to the hanger manufacturer's installation requirements.
- Web stiffeners may be cut from structural rated wood panels, engineered rimboard or 2x lumber (AJS® 25 only).
- For Structural Capacity: Web stiffeners needed to increase the AJS® Joist's reaction capacity at a specific bearing location.
- Web stiffeners are always required in certain roof applications. See *Roof Framing Details* on page 15.
- 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 used to increase allowable reaction values. See *Factored Resistances Limit States Design (CANADA)* on page 4 of this guide or the BC CALC® software.

Connection Details

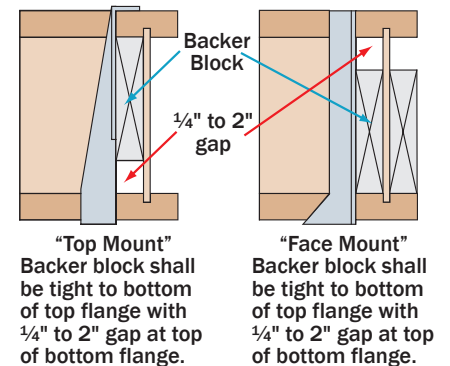
F15D Connection on Steel Beam

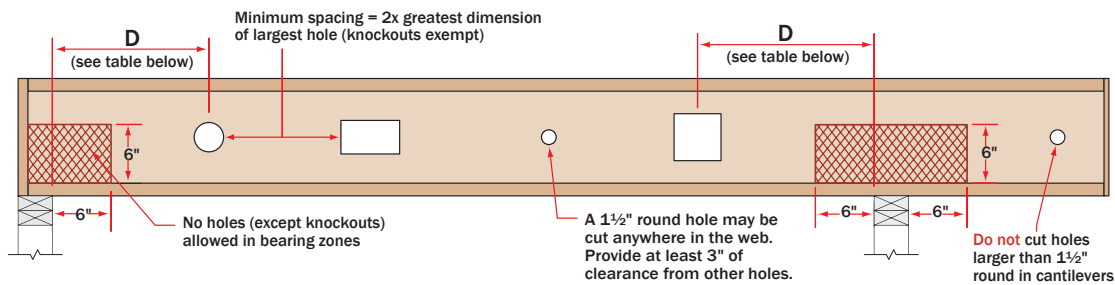


F15E Connection with Hanger on Steel Beam



F16D Hanger Connections to AJS® Headers





DO NOT
cut or notch
flange

DO
cut in web area
as specified

AJS® Joists are manufactured with 1 1/2" 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 1 1/2"

TABLE 1

ROUND HOLES

Minimum distance from inside face of any support to the centerline of hole					JOIST DEPTH • HOLE SIZE [IN]											
Span [ft]	9 1/2"				11 5/8"				14"				16"			
	3"	6"	9"	12"	3"	6"	9"	12"	3"	6"	9"	12"	3"	6"	9"	12"
8'	1' - 0"	1' - 6"	-	-	1' - 0"	1' - 0"	-	-	1' - 0"	1' - 0"	1' - 0"	-	1' - 0"	1' - 0"	1' - 0"	1' - 0"
10'	1' - 0"	2' - 6"	-	-	1' - 0"	1' - 0"	-	-	1' - 0"	1' - 0"	1' - 0"	-	1' - 0"	1' - 0"	1' - 0"	1' - 0"
12'	1' - 0"	4' - 0"	-	-	1' - 0"	1' - 0"	-	-	1' - 0"	1' - 0"	1' - 0"	-	1' - 0"	1' - 0"	1' - 0"	1' - 6"
14'	1' - 0"	5' - 0"	-	-	1' - 0"	1' - 0"	-	-	1' - 0"	1' - 0"	1' - 6"	-	1' - 0"	1' - 0"	1' - 0"	2' - 6"
16'	2' - 0"	6' - 6"	-	-	1' - 0"	2' - 0"	-	-	1' - 0"	1' - 0"	2' - 6"	-	1' - 0"	1' - 0"	1' - 0"	3' - 6"
18'	3' - 0"	7' - 6"	-	-	1' - 0"	3' - 6"	-	-	1' - 0"	1' - 0"	4' - 0"	-	1' - 0"	1' - 0"	1' - 0"	4' - 6"
20'	4' - 0"	9' - 0"	-	-	1' - 0"	4' - 6"	-	-	1' - 0"	1' - 0"	5' - 0"	-	1' - 0"	1' - 0"	2' - 0"	6' - 0"
22'	5' - 0"	10' - 0"	-	-	1' - 6"	5' - 6"	-	-	1' - 0"	2' - 6"	6' - 0"	-	1' - 0"	1' - 0"	3' - 0"	7' - 0"
24'	6' - 6"	11' - 6"	-	-	2' - 6"	7' - 0"	-	-	1' - 0"	3' - 6"	7' - 6"	-	1' - 0"	1' - 0"	4' - 0"	8' - 0"
26'	-	-	-	-	4' - 0"	8' - 0"	-	-	1' - 0"	4' - 6"	8' - 6"	-	1' - 0"	1' - 6"	5' - 6"	9' - 6"
28'	-	-	-	-	5' - 0"	9' - 0"	-	-	2' - 0"	5' - 6"	10' - 0"	-	1' - 0"	2' - 6"	6' - 6"	10' - 6"
30'	-	-	-	-	-	-	-	-	3' - 0"	7' - 0"	11' - 0"	-	1' - 0"	4' - 0"	7' - 6"	12' - 0"
32'	-	-	-	-	-	-	-	-	4' - 0"	8' - 0"	12' - 6"	-	1' - 6"	5' - 0"	9' - 0"	13' - 0"
34'	-	-	-	-	-	-	-	-	-	-	-	-	2' - 6"	6' - 0"	10' - 0"	14' - 6"

TABLE 2

SQUARE HOLES

Minimum distance from inside face of any support to the centerline of hole					JOIST DEPTH • HOLE SIZE [IN]											
Span [ft]	9 1/2"				11 5/8"				14"				16"			
	3"	6"	9"	12"	3"	6"	9"	12"	3"	6"	9"	12"	3"	6"	9"	12"
8'	1' - 0"	1' - 6"	-	-	1' - 0"	1' - 0"	-	-	1' - 0"	1' - 0"	1' - 0"	-	1' - 0"	1' - 0"	1' - 0"	1' - 0"
10'	1' - 0"	2' - 6"	-	-	1' - 0"	1' - 0"	-	-	1' - 0"	1' - 0"	1' - 0"	-	1' - 0"	1' - 0"	1' - 0"	2' - 6"
12'	1' - 6"	4' - 0"	-	-	1' - 0"	1' - 6"	-	-	1' - 0"	1' - 0"	2' - 6"	-	1' - 0"	1' - 0"	1' - 0"	3' - 6"
14'	2' - 6"	5' - 0"	-	-	1' - 0"	2' - 6"	-	-	1' - 0"	1' - 0"	3' - 6"	-	1' - 0"	1' - 0"	2' - 0"	4' - 6"
16'	3' - 6"	6' - 6"	-	-	1' - 6"	4' - 0"	-	-	1' - 0"	2' - 0"	4' - 6"	-	1' - 0"	1' - 0"	3' - 0"	6' - 0"
18'	5' - 0"	7' - 6"	-	-	2' - 6"	5' - 0"	-	-	1' - 0"	3' - 0"	6' - 0"	-	1' - 0"	1' - 6"	4' - 0"	7' - 0"
20'	6' - 0"	9' - 0"	-	-	3' - 6"	6' - 6"	-	-	2' - 0"	4' - 6"	7' - 0"	-	1' - 0"	2' - 6"	5' - 6"	8' - 6"
22'	7' - 0"	10' - 0"	-	-	5' - 0"	7' - 6"	-	-	3' - 0"	5' - 6"	8' - 6"	-	1' - 0"	3' - 6"	6' - 6"	10' - 0"
24'	8' - 6"	11' - 6"	-	-	6' - 0"	8' - 6"	-	-	4' - 0"	6' - 6"	9' - 6"	-	2' - 0"	5' - 0"	7' - 6"	11' - 0"
26'	-	-	-	-	7' - 0"	10' - 0"	-	-	5' - 0"	8' - 0"	11' - 0"	-	3' - 6"	6' - 0"	9' - 0"	12' - 6"
28'	-	-	-	-	8' - 6"	11' - 0"	-	-	6' - 0"	9' - 0"	12' - 0"	-	4' - 6"	7' - 0"	10' - 0"	13' - 6"
30'	-	-	-	-	-	-	-	-	7' - 6"	10' - 0"	13' - 6"	-	5' - 6"	8' - 6"	11' - 6"	*
32'	-	-	-	-	-	-	-	-	8' - 6"	11' - 6"	14' - 6"	-	6' - 6"	9' - 6"	12' - 6"	*
34'	-	-	-	-	-	-	-	-	-	-	-	-	8' - 0"	11' - 0"	14' - 0"	*

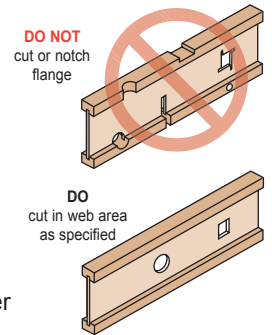
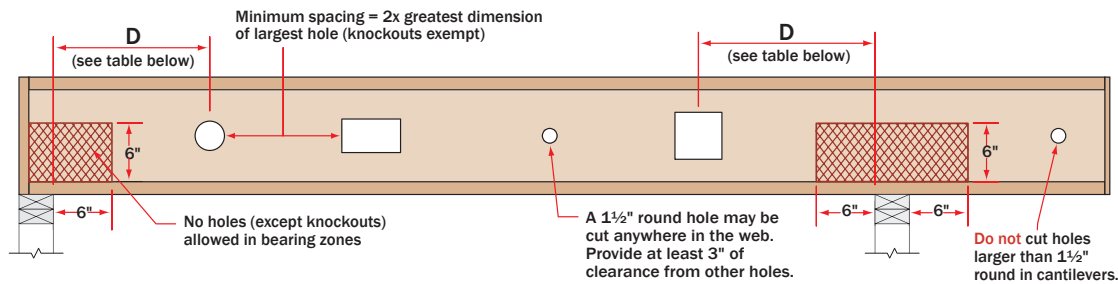
TABLE 3

RECTANGULAR HOLES

Minimum distance from inside face of any support to the centerline of hole					JOIST DEPTH • HOLE SIZE [IN]											
Span [ft]	9 1/2"				11 5/8"				14"				16"			
	5"x8"	5"x10"	5"x12"	5"x14"	7"x10"	7"x12"	7"x14"	7"x16"	10"x12"	10"x14"	10"x16"	10"x18"	10"x16"	10"x18"	12"x14"	12"x16"
8'	1' - 6"	2' - 0"	2' - 0"	2' - 6"	1' - 0"	1' - 6"	2' - 0"	2' - 6"	1' - 6"	2' - 6"	3' - 0"	*	1' - 6"	2' - 6"	2' - 0"	3' - 0"
10'	2' - 6"	3' - 0"	3' - 6"	4' - 0"	2' - 0"	2' - 6"	3' - 6"	4' - 0"	3' - 0"	3' - 6"	4' - 6"	*	3' - 0"	4' - 0"	3' - 0"	4' - 0"
12'	3' - 6"	4' - 0"	4' - 6"	5' - 0"	3' - 6"	4' - 0"	4' - 6"	5' - 0"	4' - 0"	4' - 6"	5' - 6"	*	4' - 0"	5' - 0"	4' - 6"	5' - 6"
14'	5' - 0"	5' - 6"	6' - 0"	6' - 6"	4' - 6"	5' - 0"	6' - 0"	6' - 6"	5' - 0"	6' - 0"	*	*	5' - 6"	6' - 6"	5' - 6"	6' - 6"
16'	6' - 0"	6' - 6"	7' - 0"	7' - 6"	5' - 6"	6' - 6"	7' - 0"	*	6' - 6"	7' - 6"	*	*	6' - 6"	7' - 6"	7' - 0"	*
18'	7' - 6"	8' - 0"	8' - 6"	*	7' - 0"	7' - 6"	8' - 6"	*	7' - 6"	8' - 6"	*	*	8' - 0"	*	8' - 0"	*
20'	8' - 6"	9' - 0"	9' - 6"	*	8' - 0"	9' - 0"	9' - 6"	*	9' - 0"	*	*	*	9' - 0"	*	9' - 6"	*
22'	10' - 0"	10' - 6"	*	*	9' - 6"	10' - 0"	*	*	10' - 6"	*	*	*	10' - 6"	*	*	*
24'	11' - 0"	*	*	*	10' - 6"	11' - 6"	*	*	11' - 6"	*	*	*	11' - 6"	*	*	*
26'	-	-	-	-	12' - 0"	*	*	*	*	*	*	*	*	*	*	*
28'	-	-	-	-	13' - 6"	*	*	*	*	*	*	*	*	*	*	*
30'	-	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*
32'	-	-	-	-	-	-	-	-	*	*	*	*	*	*	*	*
34'	-	-	-	-	-	-	-	-	-	-	-	-	*	*	*	*

NOTES:

- Hole may be positioned vertically anywhere in the web.
- Tables 1-6 are for uniformly loaded maximum loads of 40 psf live loads and 15 psf dead loads on simple span application.
- For other load conditions or hole sizes, contact your local distributor.
- It may be possible to exceed the limitations of those tables by analysing a specific situation with the BC CALC® Software.
- * = Holes may be acceptable, contact your local distributor.



AJS® 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"

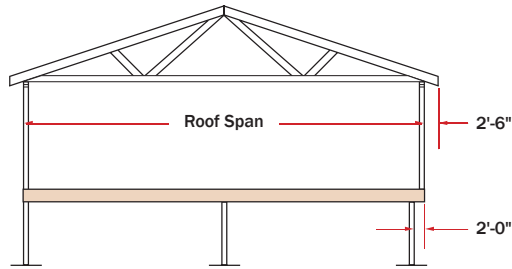
TABLE 4		ROUND HOLES															
Minimum distance from inside face of any support to the centerline of hole												JOIST DEPTH • HOLE SIZE [IN]					
Span [ft]	18"				20"				22"				24"				
	3"	6"	9"	12"	6"	9"	12"	15"	6"	9"	12"	15"	9"	12"	15"	18"	
8'	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	
10'	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	3'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	
12'	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	1'-0"	1'-0"	1'-0"	4'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	
14'	1'-0"	1'-0"	1'-0"	3'-6"	1'-0"	1'-0"	1'-0"	6'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-0"	1'-0"	1'-0"	3'-6"	
16'	1'-0"	1'-0"	1'-0"	4'-6"	1'-0"	1'-0"	1'-0"	7'-0"	1'-0"	1'-0"	1'-0"	2'-6"	1'-0"	1'-0"	1'-0"	4'-6"	
18'	1'-0"	1'-0"	1'-0"	6'-0"	1'-0"	1'-0"	1'-6"	8'-6"	1'-0"	1'-0"	1'-0"	3'-6"	1'-0"	1'-0"	1'-0"	5'-6"	
20'	1'-0"	1'-0"	1'-0"	7'-0"	1'-0"	1'-0"	2'-6"	9'-6"	1'-0"	1'-0"	1'-0"	5'-0"	1'-0"	1'-0"	1'-0"	7'-0"	
22'	1'-0"	1'-0"	1'-6"	8'-6"	1'-0"	1'-0"	3'-6"	*	1'-0"	1'-0"	1'-0"	6'-0"	1'-0"	1'-0"	2'-0"	8'-0"	
24'	1'-0"	1'-0"	2'-6"	9'-6"	1'-0"	1'-0"	5'-0"	*	1'-0"	1'-0"	1'-0"	7'-0"	1'-0"	1'-0"	3'-6"	9'-6"	
26'	1'-0"	1'-0"	3'-6"	11'-0"	1'-0"	1'-0"	6'-0"	*	1'-0"	1'-0"	2'-6"	8'-6"	1'-0"	1'-0"	4'-6"	10'-6"	
28'	1'-0"	1'-0"	4'-6"	12'-0"	1'-0"	1'-0"	7'-0"	*	1'-0"	1'-0"	3'-6"	9'-6"	1'-0"	1'-0"	5'-6"	12'-0"	
30'	1'-0"	1'-0"	5'-6"	13'-6"	1'-0"	2'-0"	8'-6"	*	1'-0"	1'-0"	4'-6"	11'-0"	1'-0"	1'-0"	6'-6"	13'-0"	
32'	1'-0"	1'-0"	7'-0"	14'-6"	1'-0"	3'-0"	9'-6"	*	1'-0"	1'-0"	5'-6"	12'-0"	1'-0"	2'-6"	8'-0"	14'-6"	
34'	1'-0"	1'-6"	8'-0"	16'-0"	1'-0"	4'-6"	11'-0"	*	1'-0"	1'-0"	6'-6"	13'-6"	1'-0"	3'-6"	9'-0"	15'-6"	

TABLE 5		SQUARE HOLES															
Minimum distance from inside face of any support to the centerline of hole												JOIST DEPTH • HOLE SIZE [IN]					
Span [ft]	18"				20"				22"				24"				
	3"	6"	9"	12"	6"	9"	12"	15"	6"	9"	12"	15"	9"	12"	15"	18"	
8'	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	
10'	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-0"	1'-0"	1'-0"	4'-6"	
12'	1'-0"	1'-0"	1'-0"	1'-0"	1'-6"	1'-0"	1'-0"	1'-0"	4'-0"	1'-0"	1'-0"	1'-0"	2'-6"	1'-0"	1'-0"	1'-6"	5'-6"
14'	1'-0"	1'-0"	1'-0"	1'-0"	3'-0"	1'-0"	1'-0"	1'-6"	5'-6"	1'-0"	1'-0"	1'-0"	4'-0"	1'-0"	1'-0"	2'-6"	*
16'	1'-0"	1'-0"	1'-0"	1'-0"	4'-0"	1'-0"	1'-0"	2'-6"	6'-6"	1'-0"	1'-0"	1'-6"	5'-0"	1'-0"	1'-0"	4'-0"	*
18'	1'-0"	1'-0"	1'-0"	1'-6"	5'-0"	1'-0"	1'-0"	3'-6"	8'-0"	1'-0"	1'-0"	2'-6"	6'-6"	1'-0"	1'-6"	5'-0"	*
20'	1'-0"	1'-0"	1'-0"	2'-6"	6'-6"	1'-0"	1'-6"	5'-0"	9'-0"	1'-0"	1'-0"	3'-6"	7'-6"	1'-0"	2'-6"	6'-0"	*
22'	1'-0"	1'-0"	1'-0"	3'-6"	7'-6"	1'-0"	2'-6"	6'-0"	10'-6"	1'-0"	1'-0"	4'-6"	9'-0"	1'-0"	3'-6"	7'-6"	*
24'	1'-0"	1'-6"	5'-0"	9'-0"	1'-0"	3'-6"	7'-0"	11'-6"	1'-0"	2'-0"	6'-0"	10'-0"	1'-0"	4'-6"	8'-6"	*	
26'	1'-0"	2'-6"	6'-0"	10'-0"	1'-0"	4'-6"	8'-6"	*	1'-0"	3'-0"	7'-0"	11'-6"	2'-0"	5'-6"	10'-0"	*	
28'	1'-0"	3'-6"	7'-0"	11'-6"	2'-0"	5'-6"	9'-6"	*	1'-0"	4'-6"	8'-0"	12'-6"	3'-0"	7'-0"	11'-0"	*	
30'	1'-0"	4'-6"	8'-6"	12'-6"	3'-0"	7'-0"	11'-0"	*	2'-0"	5'-6"	9'-6"	14'-0"	4'-0"	8'-0"	12'-6"	*	
32'	2'-6"	5'-6"	9'-6"	14'-0"	4'-6"	8'-0"	12'-0"	*	3'-0"	6'-6"	10'-6"	15'-0"	5'-6"	9'-0"	13'-6"	*	
34'	3'-6"	7'-0"	10'-6"	15'-0"	5'-6"	9'-0"	13'-6"	*	4'-0"	7'-6"	12'-0"	16'-6"	6'-6"	10'-6"	15'-0"	*	

TABLE 6		RECTANGULAR HOLES															
Minimum distance from inside face of any support to the centerline of hole										JOIST DEPTH • HOLE SIZE [IN]							
Span [ft]	18"				20"				22"				24"				
	10"x18"	12"x14"	12"x16"	12"x18"	12"x16"	12"x18"	14"x16"	14"x18"	12"x18"	14"x16"	14"x18"	16"x18"	14"x18"	14"x20"	16"x18"	16"x20"	
8'	1' - 6"	1' - 0"	1' - 6"	3' - 0"	1' - 0"	1' - 6"	1' - 6"	3' - 0"	1' - 0"	1' - 0"	2' - 0"	3' - 0"	1' - 0"	2' - 0"	2' - 0"	3' - 6"	
10'	2' - 6"	1' - 6"	3' - 0"	4' - 0"	1' - 6"	3' - 0"	3' - 0"	4' - 6"	2' - 0"	1' - 6"	3' - 0"	4' - 6"	2' - 0"	3' - 6"	3' - 0"	*	
12'	4' - 0"	3' - 0"	4' - 0"	5' - 6"	2' - 6"	4' - 0"	4' - 0"	5' - 6"	3' - 0"	3' - 0"	4' - 0"	5' - 6"	3' - 0"	4' - 6"	4' - 6"	*	
14'	5' - 0"	4' - 0"	5' - 6"	6' - 6"	4' - 0"	5' - 6"	5' - 6"	*	4' - 0"	4' - 0"	5' - 6"	*	4' - 0"	6' - 0"	5' - 6"	*	
16'	6' - 6"	5' - 0"	6' - 6"	*	5' - 0"	6' - 6"	6' - 6"	*	5' - 6"	5' - 0"	6' - 6"	*	5' - 6"	7' - 0"	7' - 0"	*	
18'	7' - 6"	6' - 6"	8' - 0"	*	6' - 6"	8' - 0"	8' - 0"	*	6' - 6"	6' - 6"	8' - 0"	*	6' - 6"	8' - 6"	8' - 0"	*	
20'	9' - 0"	7' - 6"	9' - 0"	*	7' - 6"	9' - 0"	9' - 0"	*	7' - 6"	7' - 6"	9' - 0"	*	8' - 0"	9' - 6"	9' - 6"	*	
22'	10' - 0"	9' - 0"	10' - 6"	*	9' - 0"	10' - 6"	10' - 6"	*	9' - 0"	9' - 0"	10' - 6"	*	9' - 0"	*	10' - 6"	*	
24'	11' - 6"	10' - 0"	11' - 6"	*	10' - 0"	11' - 6"	11' - 6"	*	10' - 6"	10' - 0"	*	*	10' - 6"	*	*	*	
26'	12' - 6"	11' - 6"	*	*	11' - 6"	*	*	*	11' - 6"	11' - 6"	*	*	11' - 6"	*	*	*	
28'	*	12' - 6"	*	*	12' - 6"	*	*	*	13' - 0"	12' - 6"	*	*	13' - 0"	*	*	*	
30'	*	14' - 0"	*	*	14' - 0"	*	*	*	14' - 0"	14' - 0"	*	*	14' - 6"	*	*	*	
32'	*	15' - 6"	*	*	15' - 0"	*	*	*	15' - 6"	15' - 6"	*	*	15' - 6"	*	*	*	
34'	*	16' - 6"	*	*	16' - 6"	*	*	*	16' - 6"	16' - 6"	*	*	*	*	*	*	

NOTES:

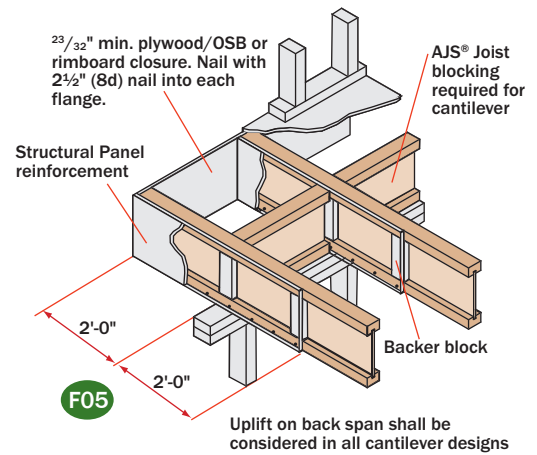
- Hole may be positioned vertically anywhere in the web.
- Tables 1-6 are for uniformly loaded maximum loads of 40 psf live loads and 15 psf dead loads on simple span application.
- For other load conditions or hole sizes, contact your local distributor.
- It may be possible to exceed the limitations of those tables by analysing a specific situation with the BC CALC® Software.
- * = Holes may be acceptable, contact your local distributor.



PLYWOOD / OSB REINFORCEMENT (If Required per Table on page 13)

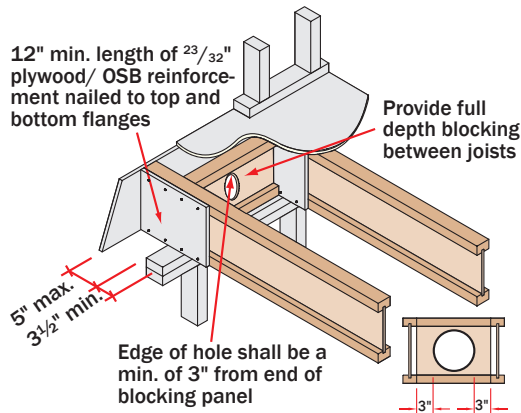
- $\frac{23}{32}$ " Min. x 48" long plywood / OSB rated sheathing must match the full depth of the AJS® Joist. Nail to the AJS® Joist with $2\frac{1}{2}$ " (8d) nails at 6" o.c. and nail with $4\frac{1}{2}$ " (8d) nails into backer block. When reinforcing both sides, stagger nails to limit splitting. Install with horizontal face grain.
- These requirements assume a 100 PLF wall load and apply to AJS® Joists. Additional support may be required for other loadings. See BC CALC® software.
- Contact Boise Cascade EWP Engineering for reinforcement requirements on AJS® Joist depths greater than 16".

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

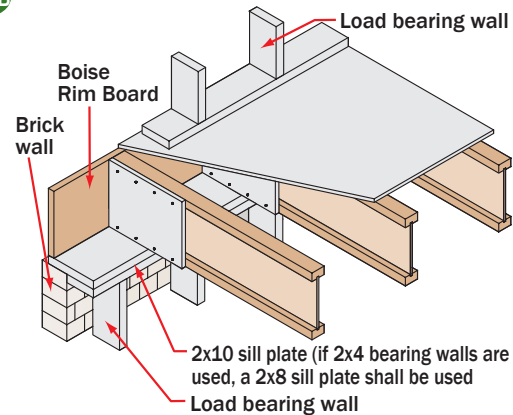


Brick Ledge Load Bearing Cantilever Details

F20A



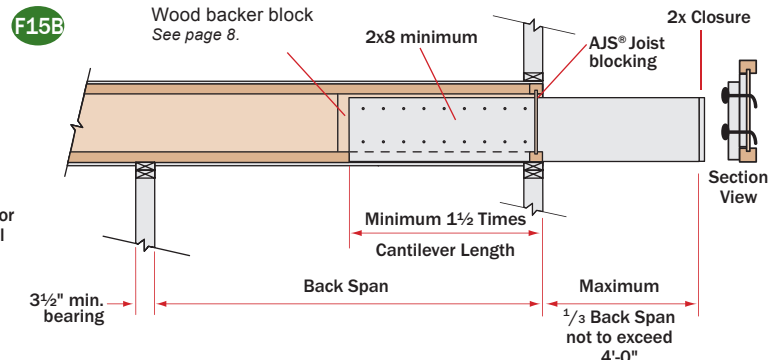
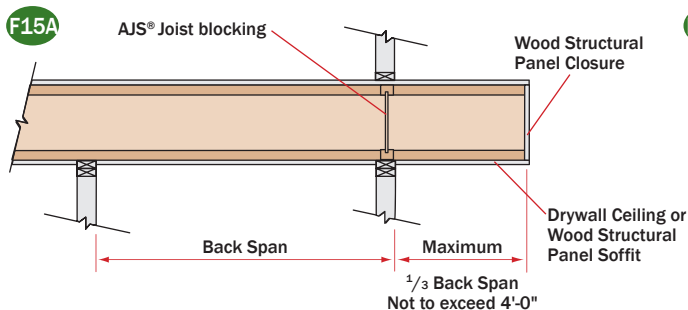
F20B



Non-Load Bearing Wall Cantilever Details

AJS® Joists are intended only for applications that provide permanent protection from the weather.

Fasten the 2x8 minimum to the AJS® Joist by nailing through the backer block and joist web with 2 rows of 3" (10d) nails at 6" on center. Use $3\frac{1}{2}$ " (16d) nails with AJS® 25 joists. Clinch all nails.



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

AJS® Joists

Joist Depth [in]	Joist Series	Roof Truss Span [ft]	Specified Snow Load [psf]								
			30			40			50		
			Joist Spacing [in]								
			16	19.2	24	16	19.2	24	16	19.2	24
9 1/2"	AJS® 140	24	0	0	2	0	2	X	1	X	X
		26	0	1	X	1	X	X	2	X	X
		28	0	1	X	1	X	X	X	X	X
		30	0	1	X	1	X	X	X	X	X
		32	0	2	X	X	X	X	X	X	X
		34	1	X	X	X	X	X	X	X	X
		36	1	X	X	X	X	X	X	X	X
		38	1	X	X	X	X	X	X	X	X
		40	1	X	X	X	X	X	X	X	X
	42	2	X	X	X	X	X	X	X	X	
	AJS® 20	24	0	0	2	0	2	X	1	X	X
		26	0	1	X	1	X	X	2	X	X
		28	0	1	X	1	X	X	X	X	X
		30	0	1	X	2	X	X	X	X	X
		32	0	2	X	2	X	X	X	X	X
		34	1	2	X	X	X	X	X	X	X
		36	1	X	X	X	X	X	X	X	X
		38	1	X	X	X	X	X	X	X	X
		40	2	X	X	X	X	X	X	X	X
	42	2	X	X	X	X	X	X	X	X	
	AJS® 25	24	0	0	X	0	X	X	2	X	X
		26	0	1	X	1	X	X	2	X	X
		28	0	1	X	2	X	X	X	X	X
		30	0	2	X	2	X	X	X	X	X
		32	0	2	X	X	X	X	X	X	X
		34	1	X	X	X	X	X	X	X	X
		36	1	X	X	X	X	X	X	X	X
		38	2	X	X	X	X	X	X	X	X
		40	2	X	X	X	X	X	X	X	X
	42	X	X	X	X	X	X	X	X	X	
11 7/8"	AJS® 140	24	0	0	0	0	0	1	0	1	X
		26	0	0	WS	0	0	X	0	1	X
		28	0	0	1	0	1	X	0	1	X
		30	0	0	1	0	1	X	1	X	X
		32	0	0	1	0	1	X	1	X	X
		34	0	0	2	0	2	X	1	X	X
		36	0	0	X	1	X	X	1	X	X
		38	0	1	X	1	X	X	X	X	X
		40	0	1	X	1	X	X	X	X	X
	42	0	1	X	1	X	X	X	X	X	
	AJS® 20	24	0	0	WS	0	0	X	0	1	X
		26	0	0	WS	0	WS	X	0	1	X
		28	0	0	1	0	1	X	0	2	X
		30	0	0	1	0	1	X	1	X	X
		32	0	0	X	0	1	X	1	X	X
		34	0	0	X	0	2	X	1	X	X
		36	0	WS	X	1	X	X	2	X	X
		38	0	1	X	1	X	X	2	X	X
		40	0	1	X	1	X	X	X	X	X
	42	0	1	X	2	X	X	X	X	X	
	AJS® 25	24	0	0	0	0	0	2	0	1	X
		26	0	0	0	0	0	X	0	1	X
		28	0	0	1	0	1	X	0	2	X
		30	0	0	1	0	1	X	1	X	X
		32	0	0	2	0	2	X	1	X	X
		34	0	0	2	0	2	X	2	X	X
		36	0	0	X	1	X	X	2	X	X
		38	0	1	X	1	X	X	X	X	X
		40	0	1	X	2	X	X	X	X	X
	42	0	1	X	2	X	X	X	X	X	

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

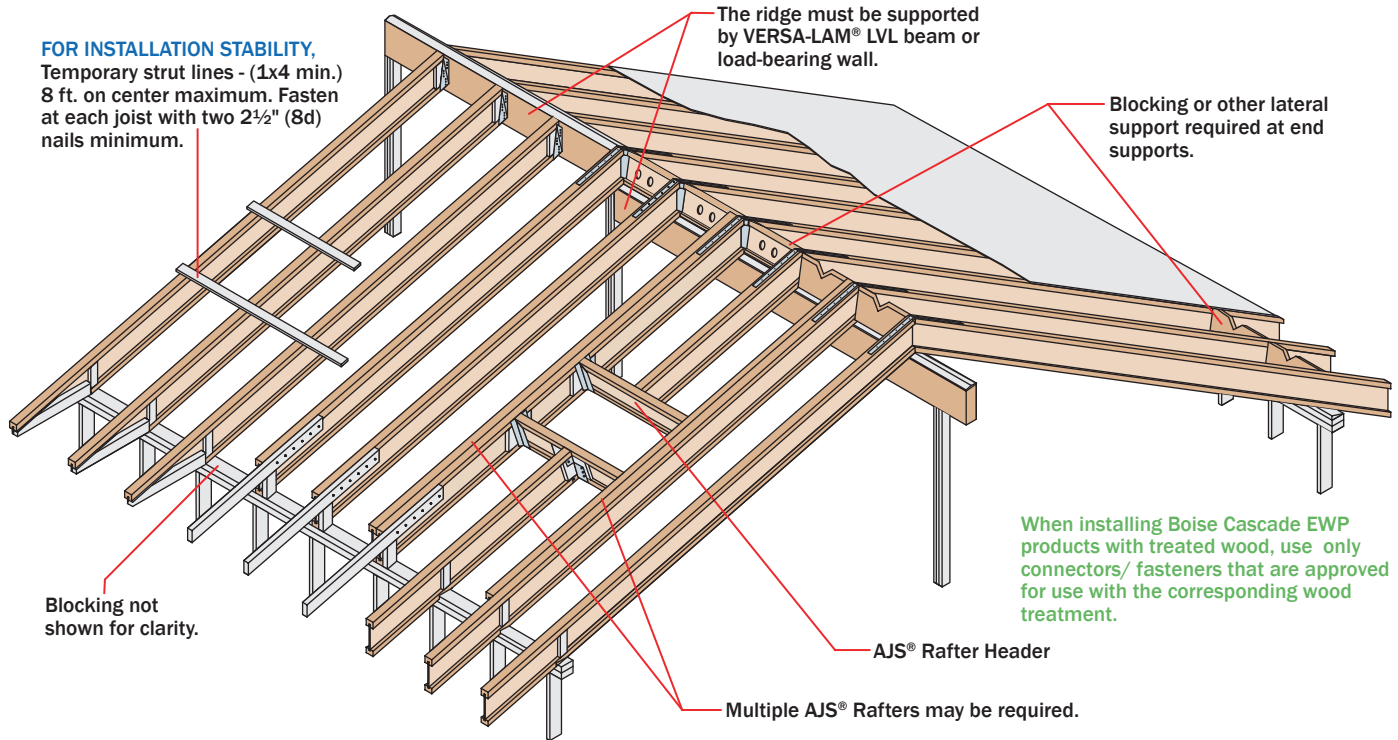
Tables are based on the following loads: 15 psf specified floor dead load, 40 psf specified floor live load, 100 plf specified wall dead load, 10 psf specified roof dead load and the listed specified snow load (Standard Term Load Duration).

Joist Depth [in]	Joist Series	Roof Truss Span [ft]	Specified Snow Load [psf]								
			30			40			50		
			Joist Spacing [in]								
			16	19.2	24	16	19.2	24	16	19.2	24
14"	AJS® 20	24	0	0	WS	0	0	WS	0	WS	1
		26	0	0	WS	0	WS	1	0	WS	X
		28	0	0	WS	0	WS	1	0	WS	X
		30	0	0	WS	0	WS	X	WS	1	X
		32	0	0	WS	0	WS	X	WS	1	X
		34	0	WS	WS	0	WS	X	WS	1	X
		36	0	WS	1	WS	1	X	WS	X	X
		38	0	WS	1	WS	1	X	1	X	X
		40	0	WS	1	WS	1	X	1	X	X
		42	0	WS	X	WS	X	X	1	X	X
	AJS® 25	24	0	0	0	0	0	WS	0	0	1
		26	0	0	0	0	0	1	0	0	2
		28	0	0	0	0	0	1	0	WS	2
		30	0	0	0	0	0	2	0	1	X
		32	0	0	WS	0	0	2	0	1	X
		34	0	0	WS	0	WS	X	0	1	X
		36	0	0	1	0	1	X	0	2	X
		38	0	0	1	0	1	X	1	2	X
		40	0	0	1	0	1	X	1	X	X
		42	0	0	2	0	2	X	1	X	X
16"	AJS® 20	24	0	0	WS	0	0	WS	0	WS	WS
		26	0	0	WS	0	WS	WS	0	WS	WS
		28	0	0	WS	0	WS	WS	0	WS	1
		30	0	0	WS	0	WS	WS	WS	WS	X
		32	0	0	WS	0	WS	1	WS	WS	X
		34	0	WS	WS	WS	WS	1	WS	WS	X
		36	0	WS	WS	WS	WS	X	WS	WS	X
		38	0	WS	WS	WS	WS	X	WS	1	X
		40	0	WS	WS	WS	WS	X	WS	1	X
		42	0	WS	WS	WS	WS	X	WS	X	X
	AJS® 25	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	1
		32	0	0	0	0	0	1	0	WS	2
		34	0	0	WS	0	WS	1	0	WS	2
		36	0	0	WS	0	WS	1	0	WS	X
		38	0	0	WS	0	WS	2	WS	1	X
		40	0	0	WS	0	WS	2	WS	1	X
		42	0	0	WS	0	WS	X	WS	2	X
18" to 24"	AJS® 25	24	WS	WS	WS	WS	WS	WS	WS	WS	WS
		26	WS	WS	WS	WS	WS	WS	WS	WS	WS
		28	WS	WS	WS	WS	WS	WS	WS	WS	WS
		30	WS	WS	WS	WS	WS	WS	WS	WS	WS
		32	WS	WS	WS	WS	WS	WS	WS	WS	WS
		34	WS	WS	WS	WS	WS	WS	WS	WS	WS
		36	WS	WS	WS	WS	WS	WS	WS	WS	WS
		38	WS	WS	WS	WS	WS	WS	WS	WS	WS
		40	WS	WS	WS	WS	WS	WS	WS	WS	WS
		42	WS	WS	WS	WS	WS	WS	WS	WS	WS

NOTES:

1. Cut 48" long reinforcing bars to match the joist depth. Use min. $23/32$ " APA Rated Sheathing, Exposure 1, 48/24 Span Rating panels. The face grain must be horizontal (measure the 48" dimension along the long edge of the panel).
2. Minimum bearing length is $3\frac{1}{2}$ ".
3. Fasten the rebar to the joist flanges with $2\frac{1}{2}$ " (8d) nails at 6" o.c. When reinforcing both sides, stagger the nails to limit splitting the joist flanges.
4. Attach web stiffeners per intermediate Web Stiffener Nailing Schedule on page 9.
5. 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.

AJS® Rafters



SAFETY WARNING

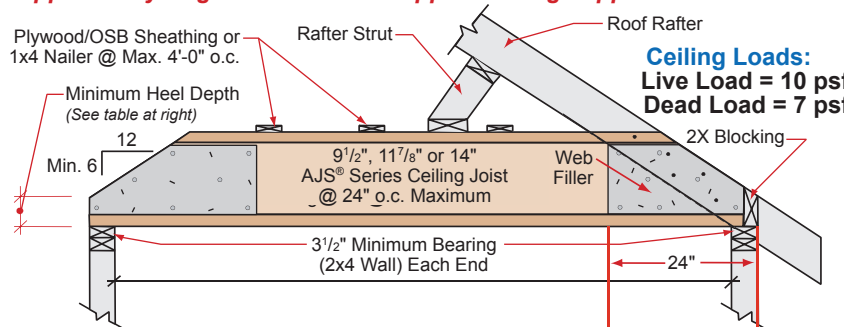
DO NOT ALLOW WORKERS ON AJS® JOISTS UNTIL ALL HANGERS, AJS® RIM JOISTS, RIM BOARDS, AJS® BLOCKING PANELS, X-BRACING AND TEMPORARY 1x4 STRUT LINES ARE INSTALLED AS SPECIFIED BELOW.

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 AJS® Joists and the first course of sheathing. As an alternate, temporary sheathing may be nailed to the first four feet of AJS® Joists at the end of the bay.
- All hangers, AJS® rim joists, rim boards, AJS® blocking panels, and x-bracing must be completely installed and properly nailed as each AJS® Joist is set.
- Install temporary 1x4 strut lines at no more than eight feet on center as additional AJS® Joists are set. Nail the strut lines to the sheathed area, or braced end wall, and to each AJS® Joist with two 2½" (8d) nails.
- The ends of cantilevers must be temporarily secured by strut lines on both the top and bottom flanges.
- Straighten the AJS® Joist 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.

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

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



Ceiling Loads:
Live Load = 10 psf
Dead Load = 7 psf

Maximum Span Lengths Without Roof Loads	
9½" AJS® 140, 20, 25	19'-6"
11⅞" AJS® 140, 20, 25	22'-0"
14" AJS® 140, 20, 25	25'-0"

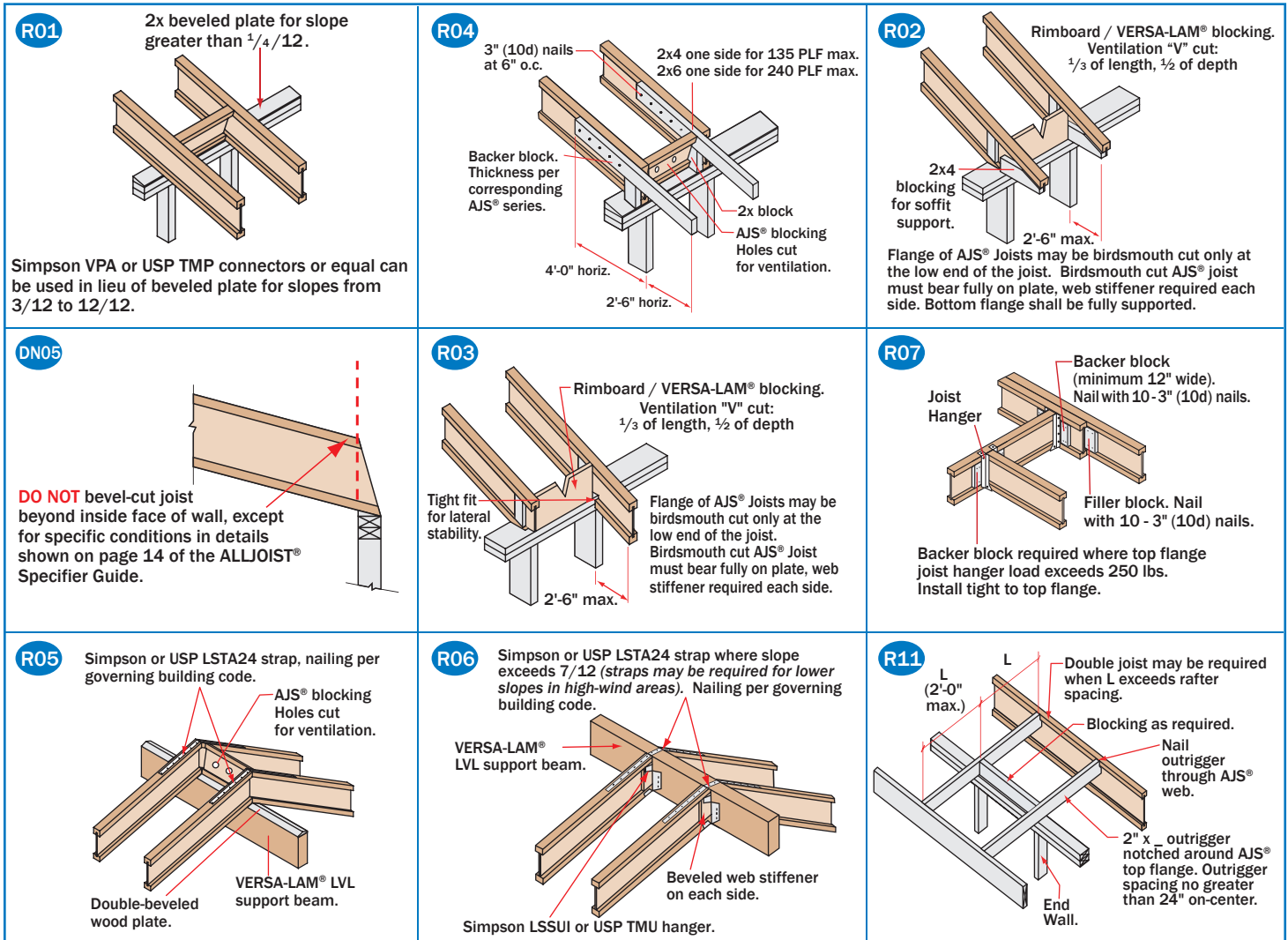
(If roof loads present, see Notes 2 & 3 at right)

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) AJS® ceiling joist end reaction may not exceed 550 pounds.
- 4) Minimum roof slope is 6/12.
- 5) Nail roof rafter to AJS® top flange with 1-3½" (16d) sinker or box nail.
- 6) 1x4 nailers must be continuous and nailed to a braced end wall.
- 7) Install a web stiffener on each side of AJS® Joist at beveled ends. Nail roof rafter to AJS® Joist per building code requirements for ceiling joist to roof rafter connection.

Additional roof framing details available with BC FRAMER® software



LATERAL SUPPORT

- AJS® Joists must be laterally supported at the ends with hangers, AJS® rim joists, rim boards, AJS® blocking panels or x-bracing. AJS® blocking panels or x-bracing are required at cantilever supports.
- Blocking may be required at intermediate bearings for floor diaphragm as per Code, consult local building official.

MINIMUM BEARING LENGTH FOR AJS® JOISTS

- 1½ inches is required at end supports (1¾ inches for 18" to 24" deep). 3½ inches 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

- AJS® rim joist, rim board or closure panel to AJS® Joist:
 - Rims or closure panel 1¾ inches thick and less: 2-2½" (8d) nails, one each in the top and bottom flange.
 - AJS® 140 / 20 rim joist: 2-3½" (16d) box nails, one each in the top and bottom flange.
 - AJS® 25 rim joist: Toe-nail top flange to rim joist with 2-3" (10d) box nails, one each side of flange.
- AJS® rim joist, rim board or AJS® blocking panel to support:
 - 2½" (8d) nails at 6 inches on center.

- When used for shear transfer, follow the building designer's specification.
- AJS® Joist to support:
 - 2-2½" (8d) nails, one on each side of the web, placed 1½ inches minimum from the end of the AJS® Joist to limit splitting.
- Sheathing to AJS® Joist:
 - Prescriptive residential roof sheathing nailing requires 2½" (8d) common nails @ 6" o.c. on edges and @ 12" o.c. in the field as per Code.
 - Maximum nail spacing for minimum lateral stability = 24".
 - 14 gauge staples may be substituted for 2½" (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
AJS® 140	1½" or two ¾" wood panels	2 x ___ + 5/8" wood panel
AJS® 20	1½" or two ¾" wood panels	2 x ___ + 5/8" wood panel
AJS® 25	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.
- For deeper AJS® 25 Joists, stack 2x lumber or use multiple pieces of ¾" wood panels.

WEB STIFFENER REQUIREMENTS

- See *Web Stiffener Requirements* on page 9.

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 AJS® Joist may all be knocked out and used for cross ventilation. Deeper joists than what is structurally needed may be advantageous in ventilation design. Consult local building official and/or ventilation specialist for specific ventilation requirements.

BIRDSMOUTH CUTS

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

PROTECT AJS® JOISTS FROM THE WEATHER

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

Loads	Series	Depth (in)	Low Roof Slope			High Roof Slope		
			16"	19.2"	24"	16"	19.2"	24"
Specified Dead Load = 10 psf Specified Snow Load = 20 psf	AJS® 140	9½"	19'-8"	18'-9"	17'-8"	17'-4"	16'-6"	15'-7"
		11⅞"	22'-5"	21'-5"	20'-3"	19'-10"	18'-11"	17'-10"
	AJS® 20	9½"	20'-10"	19'-11"	18'-9"	18'-5"	17'-7"	16'-7"
		11⅞"	23'-9"	22'-8"	21'-5"	21'-0"	20'-0"	18'-11"
		14"	26'-2"	25'-0"	23'-7"	23'-1"	22'-1"	20'-10"
		16"	28'-3"	27'-0"	25'-6"	25'-0"	23'-10"	22'-6"
	AJS® 25	9½"	22'-7"	21'-7"	20'-4"	19'-11"	19'-0"	18'-0"
		11⅞"	25'-9"	24'-7"	23'-2"	22'-9"	21'-8"	20'-6"
		14"	28'-4"	27'-0"	25'-6"	25'-0"	23'-10"	22'-6"
		16"	30'-7"	29'-2"	27'-6"	27'-0"	25'-9"	24'-4"
		18"	32'-10"	31'-4"	29'-7"	29'-0"	27'-8"	26'-1"
		20"	34'-10"	33'-3"	31'-5"	30'-9"	29'-4"	27'-9"
		20"	36'-9"	35'-1"	33'-2"	32'-6"	31'-0"	29'-3"
		24"	38'-7"	36'-10"	34'-10"	34'-1"	32'-7"	30'-9"
Specified Dead Load = 10 psf Specified Snow Load = 30 psf	AJS® 140	9½"	18'-3"	17'-5"	16'-6"	16'-3"	15'-6"	14'-8"
		11⅞"	20'-11"	19'-11"	18'-10"	18'-7"	17'-8"	16'-9"
	AJS® 20	9½"	19'-5"	18'-6"	17'-6"	17'-3"	16'-5"	15'-6"
		11⅞"	22'-2"	21'-2"	19'-11"	19'-8"	18'-9"	17'-9"
		14"	24'-5"	23'-3"	22'-0"	21'-8"	20'-8"	19'-6"
		16"	26'-4"	25'-2"	23'-9"	23'-5"	22'-4"	21'-1"
	AJS® 25	9½"	21'-0"	20'-1"	18'-11"	18'-8"	17'-10"	16'-10"
		11⅞"	24'-0"	22'-11"	21'-7"	21'-4"	20'-4"	19'-2"
		14"	26'-4"	25'-2"	23'-9"	23'-5"	22'-4"	21'-1"
		16"	28'-5"	27'-2"	25'-7"	25'-3"	24'-1"	22'-9"
		18"	30'-7"	29'-2"	27'-6"	27'-2"	25'-11"	24'-6"
		20"	32'-5"	31'-0"	29'-3"	28'-10"	27'-6"	26'-0"
		22"	34'-3"	32'-8"	30'-10"	30'-5"	29'-0"	27'-5"
		24"	36'-0"	34'-4"	32'-5"	31'-11"	30'-6"	28'-9"

NOTES:

- Spans apply to simple span application only.
- For 9½" to 16" depth, the minimum end bearing lengths are 1½" at high end and 3½" at lower end.
- For 18" and deeper depth, the minimum end bearing lengths are 1¾" at high end and 3½" at lower end.
- Stiffeners required at **ALL** bearing locations for all 18" to 24" deep joists (end bearing, interior bearing, and concentrated load locations).
- Maximum spans are measured between the supports (**clear span**) of bearing and are based on uniformly loaded joists.
- Live load deflection is limited to L/240 or 2". Total load deflection is limited to L/180 or 1".
- Refer to appropriate sections of the AllJoist Specifier Guide for installation guidelines and construction details.
- Allowable spans assume no composite action provided by sheathing.
- Low roof slope is from ¼/12 to 6/12.
- High roof slope is from 6/12 to 12/12.
- Table assumes a 2 foot roof overhang.
- 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.

WARNING: Use of Span Tables for Commercial Projects (NBCC2005: Part 4)

All projects within the scope of Part 4 of the National Building Code of Canada (NBCC) must consider the effects of concentrated loads, as stipulated in article 4.1.5.10. The designer of record must verify the effects of a concentrated load on the joists on all projects within the scope of Part 4 of NBCC (2005). Table 4.1.5.10 in NBCC (2005) lists concentrated loads that shall be analyzed with respect to the intended use of the roof. Given the numerous possible permutations, the span tables listed above do not take the effects of concentrated loads into consideration.

Loads	Series	Depth (in)	Low Roof Slope			High Roof Slope		
			16"	19.2"	24"	16"	19.2"	24"
Specified Dead Load = 10 psf Specified Snow Load = 40 psf	AJS® 140	9½"	17'-4"	16'-6"	14'-7"	15'-5"	14'-8"	13'-11"
		11⅞"	19'-9"	18'-10"	16'-8"	17'-7"	16'-10"	15'-10"
	AJS® 20	9½"	18'-4"	17'-6"	16'-6"	16'-4"	15'-7"	14'-9"
		11⅞"	20'-11"	20'-0"	18'-10"	18'-8"	17'-10"	16'-10"
		14"	23'-1"	22'-0"	20'-3"	20'-7"	19'-7"	18'-6"
		16"	24'-11"	23'-9"	20'-5"	22'-2"	21'-2"	19'-6"
	AJS® 25	9½"	19'-11"	19'-0"	17'-11"	17'-9"	16'-11"	16'-0"
		11⅞"	22'-8"	21'-8"	20'-2"	20'-2"	19'-3"	18'-2"
		14"	24'-11"	23'-9"	20'-3"	22'-3"	21'-2"	19'-3"
		16"	26'-11"	25'-8"	20'-5"	24'-0"	22'-11"	19'-6"
		18"	28'-11"	27'-7"	26'-0"	25'-9"	24'-7"	23'-3"
		20"	30'-8"	29'-3"	27'-8"	27'-4"	26'-1"	24'-8"
		22"	32'-5"	30'-11"	29'-2"	28'-10"	27'-6"	26'-0"
		24"	34'-0"	32'-5"	30'-7"	30'-4"	28'-11"	27'-4"
Specified Dead Load = 10 psf Specified Snow Load = 50 psf	AJS® 140	9½"	16'-6"	14'-11"	13'-4"	14'-9"	14'-1"	13'-0"
		11⅞"	18'-11"	17'-0"	15'-2"	16'-10"	16'-1"	14'-11"
	AJS® 20	9½"	17'-6"	16'-9"	15'-9"	15'-8"	14'-11"	14'-1"
		11⅞"	20'-0"	19'-1"	16'-8"	17'-10"	17'-1"	16'-1"
		14"	22'-0"	21'-0"	16'-9"	19'-8"	18'-9"	16'-1"
		16"	23'-9"	21'-3"	16'-11"	21'-3"	20'-3"	16'-3"
	AJS® 25	9½"	19'-0"	18'-1"	16'-7"	17'-0"	16'-2"	15'-3"
		11⅞"	21'-8"	20'-8"	16'-8"	19'-4"	18'-5"	16'-0"
		14"	23'-10"	21'-0"	16'-9"	21'-3"	20'-4"	16'-1"
		16"	25'-8"	21'-3"	16'-11"	22'-11"	20'-5"	16'-3"
		18"	27'-7"	26'-4"	24'-10"	24'-8"	23'-6"	22'-3"
		20"	29'-4"	27'-11"	26'-5"	26'-2"	25'-0"	23'-7"
		22"	30'-11"	29'-6"	27'-10"	27'-8"	26'-4"	24'-11"
		24"	32'-6"	31'-0"	29'-3"	29'-0"	27'-8"	26'-2"

NOTES:

- Spans apply to simple span application only.
- For 9½" to 16" depth, the minimum end bearing lengths are 1½" at high end and 3½" at lower end.
- For 18" and deeper depth, the minimum end bearing lengths are 1¾" at high end and 3½" at lower end.
- Stiffeners required at **ALL** bearing locations for all 18" to 24" deep joists (end bearing, interior bearing, and concentrated load locations).
- Maximum spans are measured between the supports (**clear span**) of bearing and are based on uniformly loaded joists.
- Live load deflection is limited to L/240 or 2". Total load deflection is limited to L/180 or 1".
- Refer to appropriate sections of the AllJoist Specifier Guide for installation guidelines and construction details.
- Allowable spans assume no composite action provided by sheathing.
- Low roof slope is from ¼/12 to 6/12.
- High roof slope is from 6/12 to 12/12.
- Table assumes a 2 foot roof overhang.
- 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.

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Limit States Design - Standard Term Load Duration

Deflection Criteria: L/240 (Live Load) & L/180 (Total Load)

AJS® 140 Series

Span Length [ft]	2½" Flange Width					
	9½" AJS® 140			11⅞" AJS® 140		
	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance
	L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)	
8	--	--	366	--	--	376
10	--	--	292	--	--	301
12	--	--	227	--	--	301
14	--	--	167	--	--	215
16	--	--	127	--	--	165
18	65	--	101	--	--	130
20	48	--	81	--	--	106
22	36	--	67	--	--	87
24	28	37	56	47	--	73
26	22	29	48	37	--	62

PSF to PLF CONVERSION TABLE

Joist Spacing	LOAD (psf)							
	20	25	30	35	40	45	50	60
12"	20	25	30	35	40	45	50	60
16"	27	33	40	47	53	60	67	80
19.2"	32	40	48	56	64	72	80	96
24"	40	50	60	70	80	90	100	120

TO CONVERT FROM SPECIFIED LOAD (PLF) TO FACTORED LOAD (PLF)

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

GENERAL NOTES:

1. The spans listed are the clear span distance between supports.
2. Table is valid for simple and continuous span applications under uniform load.
3. Design of continuous spans shall be based on the longest span. The shorter span shall not be less than 50% of the longest length.
4. Table assumes a fully laterally restrained compression flange.
5. The repetitive member factor, K_H is not applicable.
6. Table assumes a minimum bearing length with no stiffeners.

DEAD LOAD SLOPE FACTOR

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

How to calculate a roof plf loading:

Joist: AJS® 20, 9½"
Spacing: 24" o.c.
Span: 16'-0"
Roof Pitch: 4/12

Snow Load : SL = 30 lbs/ft²

Dead Load : DL = 10 lbs/ft²

Applied Load:

WSL = SL x tributary width

$$\text{WSL} = \frac{30 \text{ lbs}}{\text{ft}^2} \times \frac{24 \text{ in}}{12 \text{ in / ft}}$$

WSL = 60 plf (lbs/ft)

WDL = DL x tributary width x slope factor

$$\text{WDL} = \frac{10 \text{ lbs}}{\text{ft}^2} \times \frac{24 \text{ in}}{12 \text{ in / ft}} \times 1.054$$

WDL = 21.1 plf (lbs/ft)

WSL = WSL = 60 plf

WTL = WSL + WDL = 81.1 plf

WF = 1.25 x WDL + 1.50 x WSL = 117 plf (Factored)

Check Capacities :

Live Load (L/240): 60 plf < 115 plf -> **ok**

Total Load (L/180): 81.1 plf < -- -> **ok**

Factored Resistance: 117 plf < 177 plf -> **ok**

Note:

For roof pitches greater than a 2/12, approximate the increased dead load by multiplying the specified dead load by the slope factor.

Definitions:

WSL	Uniform Snow Load	[lb/ft]
WDL	Uniform Dead Load	[lb/ft]
WTL	Uniform Total Load	[lb/ft]
WF	Uniform Factored Load	[lb/ft]

Design Criteria:

Live Load Deflection: L/240

Total Load Deflection: L/180

Limit States Design - Standard Term Load Duration
Deflection Criteria: L/240 (Live Load) & L/180 (Total Load)

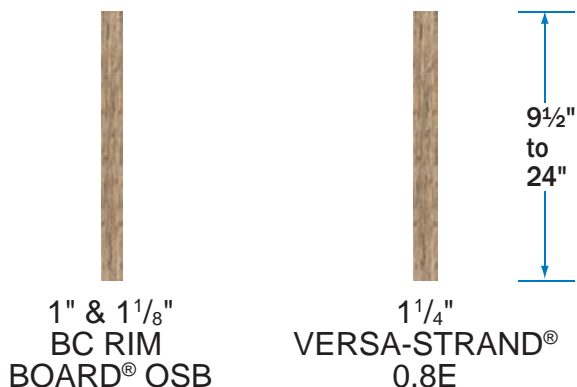
AJS® 20 Series

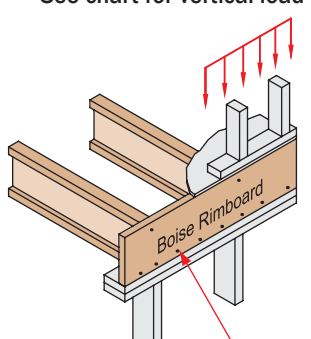
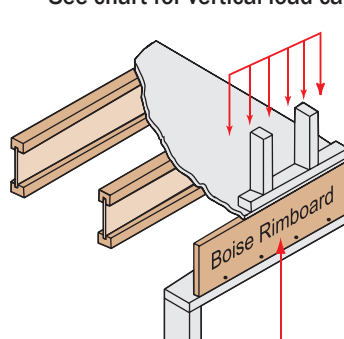
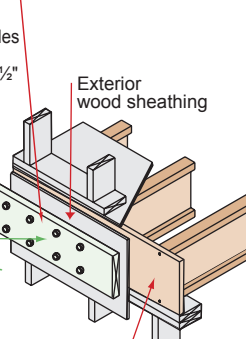
Span Length [ft]	2½" Flange Width											
	9½" AJS® 20			11⅞" AJS® 20			14" AJS® 20			16" AJS® 20		
	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance
	L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)	
8	--	--	366	--	--	376	--	--	378	--	--	382
10	--	--	292	--	--	301	--	--	303	--	--	306
12	--	--	292	--	--	301	--	--	303	--	--	306
14	--	--	209	--	--	215	--	--	216	--	--	218
16	115	--	177	--	--	188	--	--	189	--	--	191
18	82	--	140	--	--	167	--	--	168	--	--	170
20	60	--	113	--	--	147	--	--	151	--	--	153
22	46	61	93	77	--	121	--	--	137	--	--	139
24	35	47	78	60	--	102	--	--	122	--	--	127
26	28	37	67	47	--	86	69	--	104	--	--	117

AJS® 25 Series

Span Length [ft]	3½" Flange Width											
	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance	Deflection (unfactored)		Factored Strength Resistance
	L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)		L/240 (Live)	L/180 (Total)	
	9½" AJS® 25			11⅞" AJS® 25			14" AJS® 25			16" AJS® 25		
8	--	--	366	--	--	376	--	--	378	--	--	382
10	--	--	292	--	--	301	--	--	303	--	--	306
12	--	--	292	--	--	250	--	--	252	--	--	255
14	--	--	209	--	--	215	--	--	216	--	--	218
16	--	--	183	--	--	188	--	--	189	--	--	191
18	--	--	162	--	--	167	--	--	168	--	--	170
20	82	--	146	--	--	150	--	--	151	--	--	153
22	62	83	133	--	--	136	--	--	137	--	--	139
24	49	65	122	81	--	125	--	--	126	--	--	127
26	38	51	105	64	29	115	--	--	116	--	--	117
	18" AJS® 25			20" AJS® 25			22" AJS® 25			24" AJS® 25		
20	--	--	298	--	--	322	--	--	330	--	--	337
22	--	--	270	--	--	293	--	--	300	--	--	306
24	--	--	248	--	--	268	--	--	275	--	--	281
26	--	--	216	--	--	241	--	--	254	--	--	259
28	--	--	186	--	--	208	--	--	228	--	--	241
30	--	--	162	--	--	181	--	--	198	--	--	216
32	91	--	142	--	--	159	--	--	174	--	--	190
34	76	--	126	--	--	141	--	--	154	--	--	168
36	64	--	112	81	--	125	--	--	138	--	--	150
38	55	--	101	70	--	113	--	--	123	--	--	134

Boise Cascade Rimboard Product Profiles



<p>F07 Perpendicular</p> <p>See chart for vertical load capacity.</p>  <p>When used for shear transfer, nail to bearing plate with the same nailing capacity as required by the horizontal diaphragm schedule.</p>	<p>F07A Parallel</p> <p>See chart for vertical load capacity.</p>  <p>When used for shear transfer, nail to bearing plate with the same nailing capacity as required by the horizontal diaphragm schedule.</p>	<p>F56</p> <p>½" dia through bolts (ASTM A307 Grades A&B, SAE J429 Grades 1 or 2, or higher) with washers and nuts or ½" dia lag screws (full penetration) 585 lbs capacity for 1½" & thicker rim, 500 lbs capacity for 1" rim, per fastener</p>  <p>Exterior wood sheathing</p> <p>Treated Ledger Use only fasteners that are approved for use with corresponding wood treatment.</p> <p>Boise Cascade Rimboard</p> <p>Design of moisture control by others (only structural components shown above)</p>
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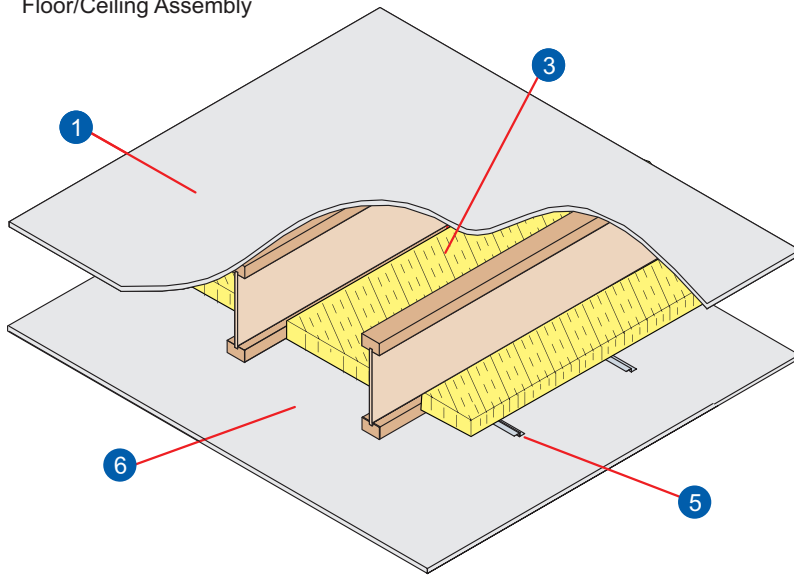
Boise Cascade Rimboard Properties

Rim Board Type	Thickness [in]	$\phi H^{(1)}$	ϕV [lb/ft] ⁽²⁾		$\phi Z^{(3)}$	$\phi P^{(4)}$
		[lb/ft]	d ≤ 16"	d > 16"	[lb]	[lb]
Boise Cascade Rimboard	1"	235	5500	2750	495	5840
	1⅝"	235	7340	5000	585	5840
Boise Cascade Rimboard Plus	1⅝"	260	8090	5340	585	5840
Boise Cascade VERSA-STRAND® 0.8E	1¼"	310	9460	5820	830	8990

NOTES:

1. ϕH = Factored horizontal (shear) load transfer capacity is based on the minimum nailing attachment schedule specified in NBCC 2005 and APA document D340CA.
2. ϕV = Factored uniform bearing (vertical) load resistance. The uniform bearing load shall be simultaneously satisfied with the concentrated vertical load resistance, when applicable.
3. ϕZ = Factored lateral resistance of a ½ inch (12.7 mm) diameter lag screw.
4. ϕP = Factored concentrated vertical load resistance based on 4½ inch (114 mm) bearing length. The concentrated vertical load shall be simultaneously satisfied with the uniform bearing load capacity, when applicable.
5. All tabulated values are applicable to the standard-term load duration and permitted to be adjusted for other load durations in accordance with CSA O86.
6. See CCMC Evaluation Report No. 13143-R for further product information on Boise Cascade VERSA-STRAND 0.8E.

45 Minute Fire Rating Floor/Ceiling Assembly



3 Insulation

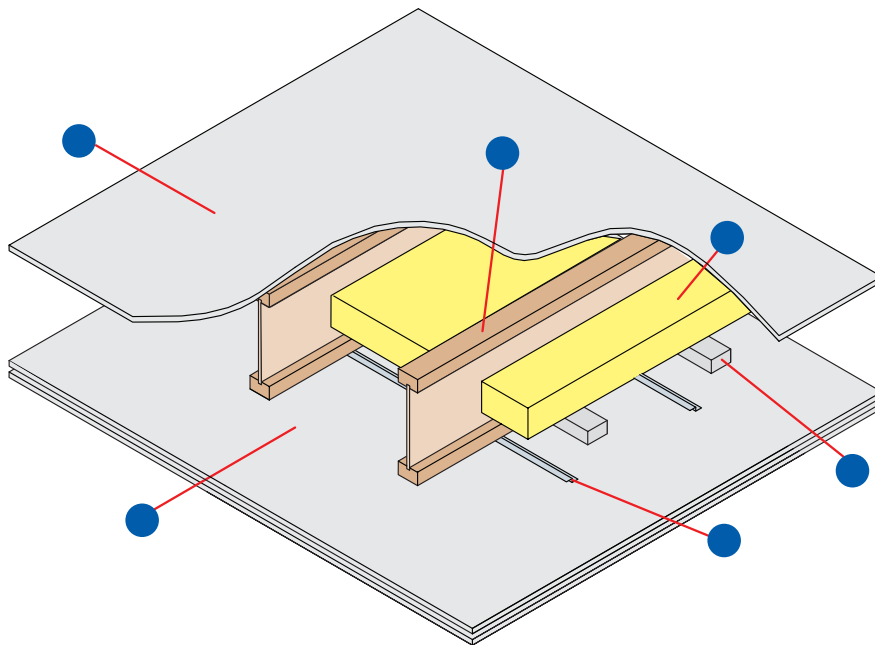
3½" thick, minimum 2.5 pcf, mineral wool insulation batts.

6 Gypsum Wallboard

One layer of ½" Type C gypsum wallboard installed perpendicular to channels with end joints staggered 48". Boards to be fastened to channels with minimum 1⅞" Type S drywall screws located 12" on center. Gypsum wallboard joints shall be covered with tape and coated with gypsum joint compound.

REFERENCE:

NBCC 2005, table A 9.10.3.1B.
Assembly F5g



3 Insulation (optional)

3½" fiberglass batt insulation.

6 Gypsum Wallboard

Two layers of ½" Type C gypsum wallboard. Base layer installed perpendicular to joists or channels and fastened with 1¾" screws located at 12" on center. Face layer installed parallel to base layer with end and edge joints staggered 16" minimum and fastened with 2¼" screws located at 12" on center on intermediate joists, and 8" on center at end joints. Gypsum wallboard joints shall be covered with tape and coated with gypsum joint compound.

REFERENCE:

PFS AJS®, Assembly 1

1 Subfloor

Minimum ⅝" plywood or OSB sheathing fastened to joists in accordance with Code specifications. Construction adhesive is optional.

2 Structural Members

AJS® Joists having a minimum depth of 9½" and spaced at 24" o.c. maximum.

4 Insulation Supports

Nominal 2x3 strapping located 16" o.c. or equivalent method to retain insulation above joist flanges.

5 Resilient Channels

Minimum 25 gauge ½" offset RC-1 galvanized steel channels installed perpendicular to joists spaced at 16" o.c. maximum and fastened with 1½" screws at each joist intersection.

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

Joist Height	Top Flange							Snap-In							Face Mount																
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load											
			Header	Joist		DF	SPF			Header	Joist		DF	SPF			Header	Joist		DF	SPF										
AJS 140, 20																						Joist Width = 2½"									
9½	LT259	2	6-10d	1-#8x1¼ws	100	2560	1725	IUS2.56/9.5	2	8-10d	—	105	2385	1700	LF259	2	10-10d	1-#8x1¼ws	100	2525	2155										
11½	LT251188	2	6-10d	1-#8x1¼ws	100	2560	1725	IUS2.56/11.88	2	10-10d	—	105	2565	1835	LF2511	2	12-10d	1-#8x1¼ws	100	2880	2270										
14	LT2514	2	6-10d	1-#8x1¼ws	100	2560	1725	IUS2.56/14	2	12-10d	—	105	2565	1835	LF2514	2	14-10d	1-#8x1¼ws	100	3235	2385										
16	LT2516	2	6-10d	1-#8x1¼ws	100	2560	1725	IUS2.56/16	2	14-10d	—	105	2725	1950	MIU2.56/16	2½	24-16d	2-10dx1½	270	4930	3485										
AJS 25																						Joist Width = 3½"									
9½	LT359	2	6-10d	2-#8x1¼ws	100	2560	1725	IUS3.56/9.5	2	10-10d	—	105	2375	1695	LF359	2	10-10d	2-#8x1¼ws	100	2525	2155										
11½	LT351188	2	6-10d	2-#8x1¼ws	100	2560	1725	IUS3.56/11.88	2	12-10d	—	105	2375	1695	LF3511	2	12-10d	2-#8x1¼ws	100	2880	2270										
14	LT3514	2	6-10d	2-#8x1¼ws	100	2560	1725	IUS3.56/14	2	12-10d	—	105	2375	1695	LF3514	2	14-10d	2-#8x1¼ws	100	3235	2385										
16	LT3516	2	6-10d	2-#8x1¼ws	100	2560	1725	IUS3.56/16	2	14-10d	—	105	2375	1695	MIU3.56/16	2½	24-16d	2-10dx1½	270	4930	3485										
18	MIT418	2½	8-16d	2-10dx1½	380	3480	2415	No IUS Hanger for these sizes							MIU3.56/18	2½	26-16d	2-10dx1½	270	4930	3485										
Joist Height	45° Skew							Adjustable Height							Field Slope & Skew																
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load											
			Header	Joist		DF	SPF			Header	Joist		DF	SPF			Header	Joist		DF	SPF										
AJS 140, 20																						Joist Width = 2½"									
9½	SUR/L2.56/9	3¾	14-16d	2-10dx1½	385	3945	2780	THAI322	2¼	6-10d	2-10dx1½	—	2740	2075	LSSUH310	3½	14-16d	12-10dx1½	1220	2620	1850										
11½	SUR/L2.56/11	3¾	16-16d	2-10dx1½	385	3945	2780	THAI322	2¼	6-10d	2-10dx1½	—	2740	2075	LSSUH310	3½	14-16d	12-10dx1½	1220	2620	1850										
14	SUR/L2.56/14	3¾	18-16d	2-10dx1½	385	3945	2780	THAI322	2¼	6-10d	2-10dx1½	—	2740	2075	LSSUH310	3½	14-16d	12-10dx1½	1220	2620	1850										
16	SUR/L2.56/14	3¾	18-16d	2-10dx1½	385	3945	2780	See Canadian Wood Construction Connectors Catalogue for hanger selection.							See Canadian Wood Construction Connectors Catalogue for hanger selection.																
AJS 25																						Joist Width = 3½"									
9½	SUR/L410	2½	14-16d	6-16d	1395	4065	2875	THAI422	2¼	6-10d	2-10dx1½	—	2740	2075	LSSU410	3½	14-16d	12-10dx1½	1220	3055	2160										
11½	SUR/L410	2½	14-16d	6-16d	1395	4065	2875	THAI422	2¼	6-10d	2-10dx1½	—	2740	2075	LSSU410	3½	14-16d	12-10dx1½	1220	3055	2160										
14	SUR/L414	2½	18-16d	8-16d	1555	4095	2895	THAI422	2¼	6-10d	2-10dx1½	—	2740	2075	LSSU410	3½	14-16d	12-10dx1½	1220	3055	2160										
16	SUR/L414	2½	18-16d	8-16d	1555	4095	2895	See Canadian Wood Construction Connectors Catalogue for hanger selection.							See Canadian Wood Construction Connectors Catalogue for hanger selection.																
18	SUR/L414	2½	18-16d	8-16d	1555	4095	2895	See Canadian Wood Construction Connectors Catalogue for hanger selection.							See Canadian Wood Construction Connectors Catalogue for hanger selection.																

- Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by others.
- THAI hangers require a minimum of 4 top and 2 face nails installed.

- The B Dim is the depth of the hanger seat.
- WS = wood screw

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

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

Joist Height	Top Flange							Face Mount							45° Skew						
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load	
			Header	Joist		Header	Joist			Header	Joist		Header	Joist			Header	Joist		Header	Joist
Double AJS 140, 20							Joist Width = 5"														
9½	MIT39.5-2	2½	8-16d	2-10dx1½	380	3480	2415	MIU5.12/9	2½	16-16d	2-10dx1½	270	4550	3215	HSUR/L5.12/9	2½ ₁₆	12-16d	2-10dx1½	195	2995	2350
11½	MIT311.88-2	2½	8-16d	2-10dx1½	380	3480	2415	MIU5.12/11	2½	20-16d	2-10dx1½	270	4550	3215	HSUR/L5.12/11	2½ ₁₆	16-16d	2-10dx1½	195	4195	2965
14	MIT314-2	2½	8-16d	2-10dx1½	380	3480	2415	MIU5.12/14	2½	22-16d	2-10dx1½	270	4930	3485	HSUR/L5.12/14	2½ ₁₆	20-16d	2-10dx1½	195	4195	2965
16	MIT5.12/16	2½	8-16d	2-10dx1½	380	3480	2415	MIU5.12/16	2½	24-16d	2-10dx1½	270	4930	3485	HSUR/L5.12/16	2½ ₁₆	24-16d	2-10dx1½	195	4195	2965
Double AJS 25							Joist Width = 7"														
9½	B7.12/9.5	2½	14-16d	6-16d	1170	5940	3910	HU410-2	2½	18-16d	8-16d	1865	5780	4670	HU410-2X ⁴	2½	18-16d	8-16d	1400	3755	3035
11½	B7.12/11.88	2½	14-16d	6-16d	1170	5940	3910	HU412-2	2½	22-16d	8-16d	1865	5780	4670	HU412-2X ⁴	2½	22-16d	8-16d	1400	3755	3035
14	B7.12/14	2½	14-16d	6-16d	1170	5940	3910	HU414-2	2½	26-16d	12-16d	2685	7025	5780	HU414-2X ⁴	2½	26-16d	12-16d	2015	4565	3755
16	B7.12/16	2½	14-16d	6-16d	1170	5940	3910	HU414-2	2½	26-16d	12-16d	2685	7025	5780	HU414-2X ⁴	2½	26-16d	12-16d	2015	4565	3755
18	B7.12/18	2½	14-16d	6-16d	1170	5940	3910	HU414-2	2½	26-16d	12-16d	2685	7025	5780	HU414-2X ⁴	2½	26-16d	12-16d	2015	4565	3755

Joist Height	Adjustable Height							Field Slope & Skew						
	Model	B Dim	Fastener Type		Uplift (115)	Down Load		Model	B Dim	Fastener Type		Uplift (115)	Down Load	
			Header	Joist		Header	Joist			Header	Joist		Header	Joist
Double AJS 140, 20							Joist Width = 5"							
9½	THAI-2 ²	2½	6-10d	2-10dx1½	—	2935	2935	LSU5.12 ³	3½	24-16d	16-10dx1½	910	2600	1835
11½	THAI-2 ²	2½	6-10d	2-10dx1½	—	2935	2935	LSU5.12 ³	3½	24-16d	16-10dx1½	910	2600	1835
14	THAI-2 ²	2½	6-10d	2-10dx1½	—	2935	2935	LSU5.12 ³	3½	24-16d	16-10dx1½	910	2600	1835
16	See Canadian Wood Construction Connectors Catalogue for hanger selection.							See Canadian Wood Construction Connectors Catalogue for hanger selection.						
Double AJS 25							Joist Width = 7"							
9½	See Canadian Wood Construction Connectors Catalogue for hanger selection.							See Canadian Wood Construction Connectors Catalogue for hanger selection.						
11½														
14														
16														
18														

1. Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by others.

2. THAI hangers require a minimum of 4 top and 2 face nails installed. THAI-2 must be special ordered, specify hanger seat width between 3¼," and 5⁵/₁₆"

3. LSU5.12 skew options must be factory ordered.

4. Skewed option must be special ordered. Specify skew angle and direction (i.e. HU410-2X, SKR 45°).

5. The B Dim is the depth of the hanger seat.

General Notes

- See current Canadian Wood Construction Connectors catalogue for Important Information and General Notes section and for hanger models, joist sizes, and header situations not shown. See pages 10-12 of the Simpson Strong-Tie Publication CSG-BCCAN08 "AJS I-JOISTS Connector Selection Guide, Limit States Design" version for installation information.
- Unless otherwise noted, factored resistances (downloads) listed address hanger/header/fastener limitations assuming header material is Douglas Fir-Larch or Spruce Pine Fir. For LVL headers made primarily of Douglas Fir/Southern Pine, use the values found in the DF column. For LVL headers made primarily from Spruce Pine Fir or similar less dense veneers, use the values found in the SPF column. Loads are in pounds. Joist reaction should be checked by a qualified designer to ensure proper hanger selection.
- Factored uplift resistances (uplift) listed assume SPF joist and header and have been increased by 15% for earthquake and wind loading with no further increase allowed. Reduce loads according to code for normal duration loading such as cantilever construction.
- If hanger height is less than 60% of joist height, joist rotation may occur; see Prevent Rotation information on page 2 of the Simpson guide referenced in Note 1 above.
- Top flange hanger configuration and thickness of top flange need to be considered for flush frame conditions, see page 10 of the Simpson guide referenced in Note 1 to the left.
- For this publication, carrying members are assumed to be at least 5½ inches tall. The horizontal thickness of the carrying member must be at least the length of nail being used or the hanger top flange dimension, whichever is greater. Exception: narrower carrying members may be used with face mount hangers but the horizontal thickness must be at least 1¼ inches for 10d nails; 2 inches for 16d nails. Clinch nails on back side.
- THAI hangers in this publication are based on a "top flange" installation and require that the carrying member have a horizontal thickness of at least 2½ inches. Backer blocks are required when the header is an I-joist.
- All nails shown are common nails unless otherwise noted.
- I-joists that are used as headers require backer blocks. See Wood I-Joist Headers in the Simpson Strong-Tie guide referenced in Note 1 for additional information.
- Multiple Members:** Multiple members should be adequately connected together to act as one unit.

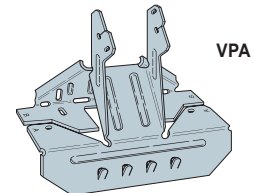
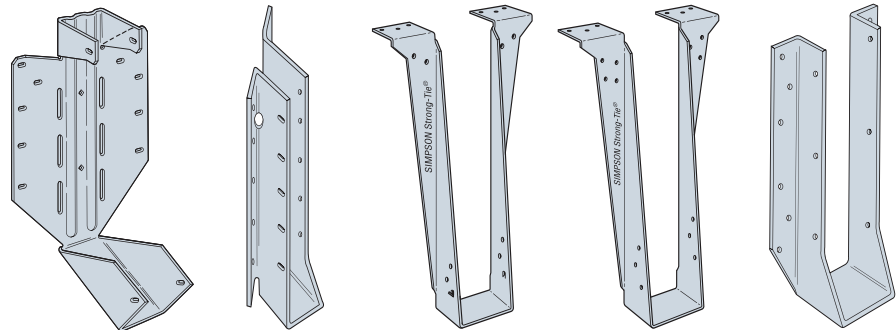
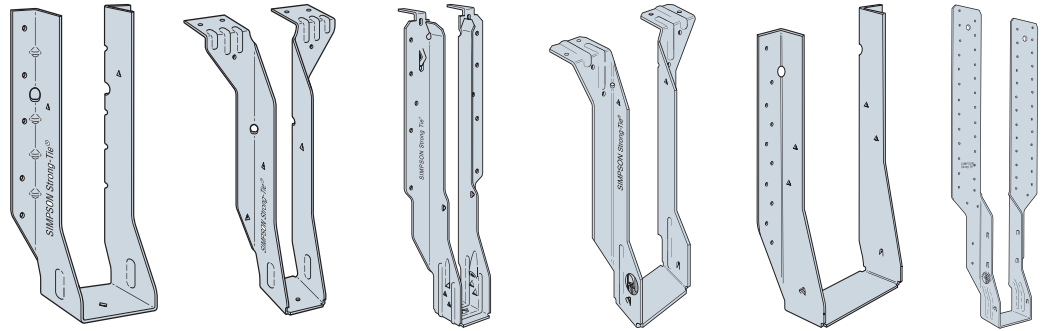
HOW TO PICK A HANGER:

- Find your joist size in this guide.
- Choose your header type. Solid header or I-joist.
 - Solid headers include solid sawn Douglas Fir, Spruce-Pine Fir, and LVL.
 - For I-joist header see page 2 of the guide referred to in Note 1 of General Notes.
- Locate your connector type in the table.
 - Face mount, top flange, skewed, sloped, etc.
- Select a hanger from the table.
- Confirm that your factored joist reaction is less than the factored resistance of hanger. If yes, you have successfully selected your hanger.

If you did not find a suitable hanger; please see the current Canadian Wood Construction Connectors catalogue or call Simpson Strong-Tie at 800-999-5099.

You will need the following information:

- Download
- Uplift
- Header condition
- Bearing length requirement



VPA - Variable Pitch Connectors

Joist Width	Model No.	Fasteners		Factored Resistances							
		Top Plate	Rafter	Uplift [115%]		Down Load [100]		Lateral [115%]			
				DF	SPF	DF	SPF	DF		SPF	
								F ₁	F ₂	F ₁	F ₂
2½	VPA3	9-10d	2-10dx1½	545	390	1785	1785	625	415	615	415
3½	VPA4	11-10d	2-10dx1½	545	390	1785	1785	625	415	615	415

VPA Connector - 18 gauge

- This variable pitch connector allows a sloped beam to sit on a top plate without having to notch, birdmouth, bevel, or toe nail. It also provides uplift capacity. Adjustable from 3:12 to 12:12 pitch.
- VPAs are not appropriate for applications that require more than 2" of bearing, such as intermediate supports.



SINGLE I-JOISTS - Canadian/Factored Resistance (lbs)

Top Mount Hangers ⁵								Face Mount Hangers									
Joist Height	USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP		S-P-F		USP Stock No. ¹	Fastener Schedule ⁴		DF-L/SP		S-P-F				
		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³			
				100%	115%	100%	115%				100%	115%	100%	115%			
AJS™ 140 or AJS™ 20														Joist Width = 2-1/2"			
9-1/2	TFL2595	(6) 10d	(2) 10d x 1-1/2	2495	745	1771	530	THF25925	(12) 10d	(2) 10d x 1-1/2	3310	335	2350	238			
11-7/8	TFL25118	(6) 10d	(2) 10d x 1-1/2	2495	745	1771	530	THF25112	(14) 10d	(2) 10d x 1-1/2	3310	720	2350	511			
14	TFL2514	(6) 10d	(2) 10d x 1-1/2	2495	745	1771	530	THF25140	(18) 10d	(2) 10d x 1-1/2	4405	720	3128	511			
16	TFL2516	(6) 10d	(2) 10d x 1-1/2	2495	745	1771	530	THF25160	(22) 10d	(2) 10d x 1-1/2	4405	720	3128	511			
AJS™ 25														Joist Width = 3-1/2"			
9-1/2	THO35950	(10) 10d	(2) 10d x 1-1/2	2975	500	2115	355	THF35925	(12) 10d	(2) 10d x 1-1/2	5240	465	3720	330			
11-7/8	THO35118	(10) 10d	(2) 10d x 1-1/2	2975	500	2115	355	THF35112	(16) 10d	(2) 10d x 1-1/2	5240	465	3720	330			
14	THO35140	(12) 10d	(2) 10d x 1-1/2	4450	500	3160	355	THF35140	(20) 10d	(2) 10d x 1-1/2	6680	465	4743	330			
16	THO35160	(12) 10d	(2) 10d x 1-1/2	4450	500	3160	355	THF35157	(22) 10d	(2) 10d x 1-1/2	6680	465	4743	330			
18	TFI418	(6) 16d	(2) 10d x 1-1/2	4190	545	2975	385	THF35157	(22) 10d	(2) 10d x 1-1/2	6680	465	4743	330			
Adjustable Height Hangers								Slope and Skew Hangers									
Joist Height	USP Stock No. ^{1,6}	Fastener Schedule ⁴		DF-L/SP		S-P-F		USP Stock No. ¹	Fastener Schedule ⁴		DF-L/SP		S-P-F				
		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³			
				100%	115%	100%	115%				100%	115%	100%	115%			
AJS™ 140 or AJS™ 20														Joist Width = 2-1/2"			
9-1/2	--	--	--	--	--	--	--	LSSH25	(14) 16d	(12) 10d x 1-1/2	4260	1955	3025	1390			
11-7/8	MSH318	(6) 10d	(4) 10d x 1-1/2	1185	--	840	--	LSSH25	(14) 16d	(12) 10d x 1-1/2	4260	1955	3025	1390			
14	MSH318	(6) 10d	(4) 10d x 1-1/2	1185	--	840	--	LSSH25	(14) 16d	(12) 10d x 1-1/2	4260	1955	3025	1390			
16	MSH318	(6) 10d	(4) 10d x 1-1/2	1185	--	840	--	LSSH25 ⁸	(14) 16d	(12) 10d x 1-1/2	4260	1955	3025	1390			
AJS™ 25														Joist Width = 3-1/2"			
9-1/2	MSH422	(6) 10d	(4) 10d	1105	--	785	--	LSSH35	(14) 16d	(12) 10d x 1-1/2	5230	2595	3715	1845			
11-7/8	MSH422	(6) 10d	(4) 10d	1105	--	785	--	LSSH35	(14) 16d	(12) 10d x 1-1/2	5230	2595	3715	1845			
14	--	--	--	--	--	--	--	LSSH35	(14) 16d	(12) 10d x 1-1/2	5230	2595	3715	1845			
16	--	--	--	--	--	--	--	LSSH35 ⁸	(14) 16d	(12) 10d x 1-1/2	5230	2595	3715	1845			
18	--	--	--	--	--	--	--	LSSH35 ⁸	(14) 16d	(12) 10d x 1-1/2	5230	2595	3715	1845			
Skewed 45° Hangers																	
Joist Height	USP Stock No. ¹	Fastener Schedule ⁴		DF-L/SP		S-P-F			Fastener Schedule ⁴		DF-L/SP		S-P-F				
		Plate	Rafter	Down ²	Uplift ³	Down ²	Uplift ³		Plate	Rafter	Down ²	Uplift ³	Down ²	Uplift ³			
				100%	115%	100%	115%				100%	115%	100%	115%			
AJS™ 140 or AJS™ 20														Joist Width = 2-1/2"			
9-1/2	SKH2520L/R	(14) 10d	(10) 10d x 1-1/2	3265	2910	2320	2065										
11-7/8	SKH2520L/R	(14) 10d	(10) 10d x 1-1/2	3265	2910	2320	2065										
14	SKH2524L/R	(16) 10d	(10) 10d x 1-1/2	3265	2910	2320	2065										
16	SKH2524L/R	(16) 10d	(10) 10d x 1-1/2	3265	2910	2320	2065										
AJS™ 25														Joist Width = 3-1/2"			
9-1/2	SKH410L/R ⁷	(16) 16d	(10) 16d	3690	3560	2620	2530										
11-7/8	SKH410L/R ⁷	(16) 16d	(10) 16d	3690	3560	2620	2530										
14	SKH414L/R ⁷	(22) 16d	(10) 16d	7405	3560	5260	2530										
16	SKH414L/R ⁷	(22) 16d	(10) 16d	7405	3560	5260	2530										
18	SKH414L/R ⁷	(22) 16d	(10) 16d	7405	3560	5260	2530										
Variable Pitch Connectors																	
Joist Width	USP Stock No. ¹	Fastener Schedule ⁴		DF-L/SP		S-P-F			Fastener Schedule ⁴		DF-L/SP		S-P-F				
		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³			
				100%	115%	100%	115%				100%	115%	100%	115%			
AJS™ 140 or AJS™ 20																	
2-1/2	TMP25	(6) 10d	(4) 10d x 1-1/2	2630	275	2630	275										
	TMPH25	(10) 10d	(8) 10d x 1-1/2	3485	250	2995	215										
AJS™ 25																	
3-1/2	TMP4	(6) 10d	(4) 10d x 1-1/2	2835	275	2835	275										
	TMPH4	(10) 10d	(8) 10d x 1-1/2	3485	250	2995	215										

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.

2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L, SP, or S-P-F species solid sawn or LVL header. Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.

3) Uplift loads have been increased 15% for wind and seismic loading; no further increase shall be permitted.

4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long. Minimum nail penetration shall be 1-1/2" for 10d nails.

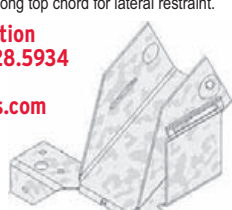
5) Top Mount Hangers require minimum 3" header width for THO series hange. 3-1/2" minimum header thickness for all other stock numbers.

6) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.

7) Miter cut required on end of joist to achieve design loads.

8) LSTA24 strap required along top chord for lateral restraint.

**For further information
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or go to
www.USPconnectors.com**



1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.

2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L, SP, or S-P-F species solid sawn or LVL header. Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.

3) Uplift loads have been increased 15% for wind and seismic loading; no further increase shall be permitted.

4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.

Minimum nail penetration shall be 1-1/2" for 10d nails.

16d sinkers (0.148" diameter) by 3-1/4" long may be substituted for 10d common nails with no load reduction.

5) Top Mount Hangers require minimum 3" header width for THO series hange.

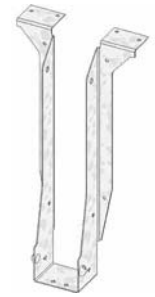
3-1/2" minimum header thickness for all other stock numbers.

6) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.

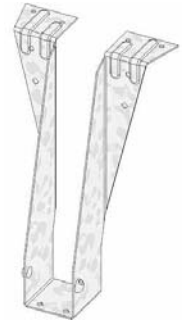
7) Miter cut required on end of joist to achieve design loads.

8) LSTA24 strap required along top chord for lateral restraint.

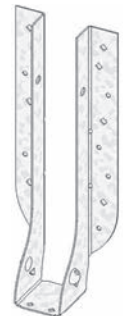
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TFL



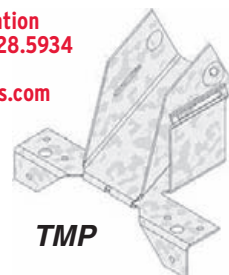
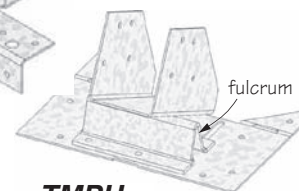
THO



THF single

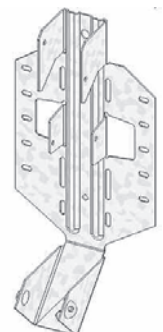


MSH

SKH_L
left shown

TMP

TMPH



LSSH

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.

2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L, SP, or S-P-F species solid sawn or LVL header. Loads are governed by test results; no further increase shall be permitted.

3) Uplift loads have been increased 15% for wind and seismic loading; no further increase shall be permitted.

4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.

Minimum nail penetration shall be 1-1/2" for 10d nails.



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

Top Mount Hangers ⁵								Face Mount Hangers															
Joist Height	USP Stock No. ^{1,5}	Fastener Schedule ⁴		DF-L/SP		S-P-F		USP Stock No. ¹	Fastener Schedule ⁴		DF-L/SP		S-P-F										
		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³									
				100%	115%	100%	115%				100%	115%	100%	115%									
AJS™ 140 or AJS™ 20																Joist Width = 5"							
9-1/2	THO25950-2	(10) 16d	(6) 10d	6005	2210	4265	1570	THF25925-2	(12) 10d	(6) 10d	5240	3325	3720	2361									
11-7/8	THO25118-2	(10) 16d	(6) 10d	6005	2210	4265	1570	THF25112-2	(16) 10d	(6) 10d	5240	3325	3720	2361									
14	THO25140-2	(12) 16d	(6) 10d	6645	2210	4715	1570	THF25140-2	(20) 10d	(6) 10d	6680	3325	4743	2361									
16	THO25160-2	(12) 16d	(6) 10d	6645	2210	4715	1570	THF25160-2	(24) 10d	(6) 10d	6680	3325	4743	2361									
18	THO25180-2	(14) 16d	(6) 10d	9500	2210	6745	1570	THF25160-2	(24) 10d	(6) 10d	6680	3325	4743	2361									
AJS™ 25																Joist Width = 7"							
9-1/2	BPH7195	(10) 16d	(6) 10d	5055	1245	4725	885	HD7100	(12) 16d	(6) 10d	7215	4435	5123	3149									
11-7/8	BPH71118	(10) 16d	(6) 10d	5055	1245	4725	885	HD7120	(16) 16d	(6) 10d	7215	4435	5123	3149									
14	BPH7114	(10) 16d	(6) 10d	5055	1245	4725	885	HD7120	(16) 16d	(6) 10d	7215	4435	5123	3149									
16	BPH7116	(10) 16d	(6) 10d	5055	1245	4725	885	HD7160	(24) 16d	(8) 10d	7215	4435	5123	3149									
18	BPH7118	(10) 16d	(6) 10d	5055	1245	4725	885	HD7160	(24) 16d	(8) 10d	7215	4435	5123	3149									
Adjustable Height Hangers																Skewed 45° Hangers							
Joist Height	USP Stock No. ^{1,8}	Fastener Schedule ⁴		DF-L/SP		S-P-F		USP Stock No. ¹	Fastener Schedule ⁴		DF-L/SP		S-P-F										
		Header	Joist	Down ²	Uplift ³	Down ²	Uplift ³		Plate	Rafter	Down ²	Uplift ³	Down ²	Uplift ³									
				100%	115%	100%	115%				100%	115%	100%	115%									
AJS™ 140 or AJS™ 20																Joist Width = 5"							
9-1/2	MSH2622-2	(6) 10d	(4) 10d	1490	---	1055	---	SKH2520L/R-2 ⁷	(14) 10d	(10) 10d	5430	3565	3855	2530									
11-7/8	MSH2622-2	(6) 10d	(4) 10d	1490	---	1055	---	SKH2524L/R-2 ⁷	(16) 10d	(10) 10d	5055	3560	3590	2530									
14	MSH2622-2	(6) 10d	(4) 10d	1490	---	1055	---	SKH2524L/R-2 ⁷	(16) 10d	(10) 10d	5055	3560	3590	2530									
16	MSH2622-2	(6) 10d	(4) 10d	1490	---	1055	---	SKH2524L/R-2 ⁷	(16) 10d	(10) 10d	5055	3560	3590	2530									
AJS™ 25																Joist Width = 7"							
9-1/2	---	---	---	---	---	---	---	HD7100-SK45L/R ^{6,7}	(12) 16d	(6) 10d	7215	3325	5123	2360									
11-7/8	MSH422-2	(8) 16d	(6) 16d	2295	---	1630	---	HD7120-SK45L/R ^{6,7}	(16) 16d	(6) 10d	7215	3325	5123	2360									
14	MSH422-2	(8) 16d	(6) 16d	2295	---	1630	---	HD7120-SK45L/R ^{6,7}	(16) 16d	(6) 10d	7215	3325	5123	2360									
16	MSH422-2	(8) 16d	(6) 16d	2295	---	1630	---	HD7160-SK45L/R ^{6,7}	(24) 16d	(8) 10d	7215	3325	5123	2360									
18	MSH422-2	(8) 16d	(6) 16d	2295	---	1630	---	HD7160-SK45L/R ^{6,7}	(24) 16d	(8) 10d	7215	3325	5123	2360									

1) Shaded hangers require web stiffeners at joist ends. Web stiffeners may be required for non-shaded hangers by I-joist manufacturers.

2) Loads listed are based on 2001 NDS® and hanger attachment to a DF-L, SP, or S-P-F species solid sawn or LVL header.

Some loads may be increased for duration of load adjustments. Refer to USP Full Line Catalog for details.

3) Uplift loads have been increased 15% for wind and seismic loading; no further increase shall be permitted.

4) 10d x 1-1/2" nails are 9 gauge (0.148" diameter) by 1-1/2" long.

Minimum nail penetration shall be 1-1/2" for 10d nails and 1-5/8" for 16d nails.

16d sinkers (0.148" diameter) by 3-1/4" long may be substituted for 10d common nails with no load reduction.

5) Top Mount Hangers require minimum 3" header width for THO series hangers; 3-1/2" minimum header thickness for all other stock numbers.

6) Hangers are special order. Consult USP for pricing and lead times.

7) Miter cut required on end of joist to achieve design loads.

8) For additional sizes, stock numbers, and modifications not shown, refer to USP's Full Line Catalog.

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HD

BPH

THF Double

THO Double

SKH_L Double
left shown

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- 1GB RAM (min.)
- Microsoft® Intellimouse
- Windows 7, Vista or XP Professional

Improvements in capacity or speed of these components will yield better performance.

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BC CALC® is Boise Cascade's sizing software for AJS® Joists and VERSA-LAM® Beams.

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Use the New Design toolbar to create a new design

Use the Loads toolbar to add loads

Use the Holes toolbar to add holes

Member Diagram: Same as BC CALC 2001a

Double-Click on Analysis to analyze design

Double-Click on Cautions to analyze design and display Report

Double-Click on any item to display and change design parameters

View tabs - Click or Ctrl+D, Ctrl+R, Ctrl+E to see the Design window, Report, or Engineering Data

Project Manager tab

Design Tabs - Each design has its own. Click or Ctrl+Arrow to select

To request a CD or Download of BC CALC® CANADA, <http://www.bc.com/wood/ewp/software/bccalc/order/CANADA-calc-form.html>

Open Window menu to hide/show all designs

Click to analyze all designs

Click Print button to print selected designs

Create sub-folders to organize your designs

Double-click on design name or icon to go to a design

Use the Hide/Show checkboxes to hide or show each design - open Window menu to hide/show all designs

Click here to enter project information

Right-Click in the Designs column to create new folders and designs

Drag column border to resize

Drag column heading to move

Right-Click to add/drop column

Columns show analysis results, double-click to go to design

CEILING	Pounds Per Square Foot [PSF]
Acoustical fiber tile ⁽¹⁾	1
Suspended steel channel system ⁽¹⁾	2
Suspended wood channel system	2.5
2x8 ceiling joists @ 16" o.c., R-49 insulation, ½" gypsum board	7
1" Plaster	8
½" gypsum board	2.2
⅝" gypsum board	2.75
ROOF	Pounds Per Square Foot [PSF]
Fiberglass shingles	3
Asphalt shingles ⁽¹⁾	2
Wood shingles ⁽¹⁾	3
Spanish clay tile ⁽¹⁾	19
Composition Roofing:	
Three-ply ready roofing ⁽¹⁾	1
Four-ply felt and gravel ⁽¹⁾	5.5
Five-ply felt and gravel ⁽¹⁾	6
20 gage metal deck ⁽¹⁾	2.5
18 gage metal deck ⁽¹⁾	3
1" fiberglass batt insulation	0.04
1" loose fiberglass insulation	0.04
1" loose cellulose insulation	0.14
1" rigid insulation ⁽¹⁾	1.5
⅜" slate ⁽¹⁾	7
¼" slate ⁽¹⁾	10
Single-ply (no ballast) ⁽¹⁾	0.7
Single-ply (ballasted)	11
Dry gravel ⁽¹⁾	8.7
2x8 rafters @ 16" o.c., fiberglass shingles, 15# felt, ⅝" sheathing	8
Skylight: metal frame w/ ⅜" wire glass ⁽¹⁾	8
FLOOR	Pounds Per Square Foot [PSF]
1" reinforced regular weight concrete	12.5
1" plain lightweight concrete ⁽¹⁾	8
⅞" cementitious backerboard	3
Ceramic or quarry tile (¾") on ½" mortar bed ⁽¹⁾	16
Ceramic or quarry tile (¾") on 1" mortar bed ⁽¹⁾	23
1" mortar bed	12
1" slate ⁽¹⁾	15
⅝" marble tile	6
⅝" ceramic floor tile ⁽¹⁾	4.7
Hardwood flooring, 7/7-in ⁽¹⁾	4
¼" linoleum or asphalt tile ⁽¹⁾	1
BCI®/AJS® joists @ 16" o.c., ¾" sheathing, ½" gypsum board	10
¾" Gyp-Crete topping	6.5
Carpet & Pad	2.0
Waterproofing Membranes	
Bituminous, smooth surface ⁽¹⁾	1.5
Liquid applied ⁽¹⁾	1
MISCELLANEOUS	Pounds Per Square Foot [PSF]
1" of sand	8
1" of water	5.2
Hay: baled, dry ⁽²⁾	15 PSF ⁽²⁾
Straw: baled, dry ⁽²⁾	8 PSF ⁽²⁾
Saturated soil (garden/landscaped roof)	135 PCF
Grand piano	1000 LBS

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

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

SHEATHING	Pounds Per Square Foot [PSF]
11/32" or ⅜" Plywood – OSB ⁽³⁾	1.0 – 1.2
15/32" or ½" Plywood – OSB ⁽³⁾	1.4 – 1.7
19/32" or ⅝" Plywood – OSB ⁽³⁾	1.8 – 2.1
23/32" or ¾" Plywood – OSB ⁽³⁾	2.2 – 2.5
⅞" Plywood – OSB ⁽³⁾	2.6 – 2.9
1⅞" Plywood – OSB ⁽³⁾	3.3 – 3.6
½" cementitious backerboard	3
1½" softwood T & G decking	4.6
FLOOR FRAMING	Pounds Per Square Foot [PSF]
2x4 @ 16" o.c.	1.1
2x6 @ 16" o.c.	1.7
2x8 @ 16" o.c.	2.2
2x10 @ 16" o.c.	2.9
2x12 @ 16" o.c.	3.5
BCI® 4500s, 5000 or 5000s @ 12" o.c.	2.1 – 2.9
BCI® 4500s, 5000 or 5000s @ 16" o.c.	1.6 – 2.2
BCI® 4500s, 5000 or 5000s @ 19.2" o.c.	1.3 – 1.8
BCI® 4500s, 5000 or 5000s @ 24" o.c.	1.1 – 1.5
BCI® 6000 or 6000s @ 12" o.c.	2.5 – 3.4
BCI® 6000 or 6000s @ 16" o.c.	1.9 – 2.6
BCI® 6000 or 6000s @ 19.2" o.c.	1.6 – 2.1
BCI® 6000 or 6000s @ 24" o.c.	1.3 – 1.7
BCI® 60, 60s, 6500 or 6500s @ 12" o.c.	2.5 – 3.8
BCI® 60, 60s, 6500 or 6500s @ 16" o.c.	1.9 – 2.9
BCI® 60, 60s, 6500 or 6500s @ 19.2" o.c.	1.6 – 2.4
BCI® 60, 60s, 6500 or 6500s @ 24" o.c.	1.3 – 1.9
BCI® 90, 90s or 90e @ 12" o.c.	3.9 – 5.4
BCI® 90, 90s or 90e @ 16" o.c.	2.9 – 4.1
BCI® 90, 90s or 90e @ 19.2" o.c.	2.4 – 3.4
BCI® 90, 90s or 90e @ 24" o.c.	1.9 – 2.7
AJS® 140 or 20 @ 12" o.c.	2.2 – 3.3
AJS® 140 or 20 @ 16" o.c.	1.7 – 2.5
AJS® 140 or 20 @ 19.2" o.c.	1.4 – 2.1
AJS® 140 or 20 @ 24" o.c.	1.1 – 1.7
AJS® 25 @ 12" o.c.	3.1 – 5.4
AJS® 25 @ 16" o.c.	2.3 – 4.1
AJS® 25 @ 19.2" o.c.	1.9 – 3.4
AJS® 25 @ 24" o.c.	1.6 – 2.7
WALL	Pounds Per Square Foot [PSF]
⅝" x 7½" fiber cement lap siding	3
4" clay brick ⁽¹⁾	39
¼" ceramic wall tile ⁽¹⁾	3.1
1¾" Cultured Stone	12
2x4 studs @ 16" o.c., ⅝" gypsum, insulation, ⅝" siding ⁽¹⁾	11
2x6 studs @ 16" o.c., ⅝" gypsum, insulation, ⅝" siding ⁽¹⁾	12
Wood or steel studs, ½" gypsum board each side ⁽¹⁾	8
Exterior stud walls w/ brick veneer ⁽¹⁾	48
Stucco	10
Log Wall: 10" diameter	26
Glass Block:	
4" Thick - standard (hollow)	20
3" Thick - standard (hollow)	16
4" Thick - thin face	30
3" Thick - solid glass block	40
Windows: glass, frame and sash ⁽¹⁾	8
Include at least 1.5 psf in all dead load summations to account for incidentals such as plumbing, ducts, light fixtures, etc.	

(3) Approximate Engineering Dead Load Weight of Wood Structural Panels, APA EWS TT-019, 2005.



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CCMC Report Number 12787-R

ALLJOIST®

The information in this document pertains to use in CANADA ONLY, Limit States Design. Refer to the ALLJOIST Specifier Guide for use in the United States.

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