



Boise Cascade®
ENGINEERED WOOD PRODUCTS

AJS® 24 Commercial
Product Guide



AJS 24 COMMERCIAL PRODUCT GUIDE Multi-Family Projects (US Version)

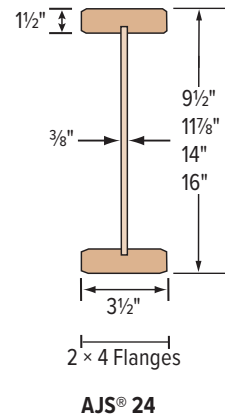
The information contained herein is for use in the UNITED STATES ONLY, Allowable Stress Design. Refer to the AJS Specifier Guide Canada for use in Canada, Limit States Design.

bc.com/ewp

Reorder #JOI-E1600

Product Profiles

Longer spans exceed the competition



Multi-Family Dwellings and Hotels: Private Rooms Floor Span Table

About Floor Performance

Expectations and opinions vary greatly due to the subjective nature of rating a new floor. Communication with the ultimate end user to determine their expectation is critical. **Vibration** is usually the cause of most complaints. Installing lateral bridging may help; however, squeaks may occur if not installed properly. Spacing the joists closer together does little to affect the perception of the floor's performance. The most common methods used to increase the performance and reduce vibration of wood floor systems is to *increase the joist depth, limit joist deflections, glue and*

screw a thicker, tongue-and-groove subfloor, install the joists vertically plumb with level-bearing supports, and install a direct-attached ceiling to the bottom flanges of the joists.

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

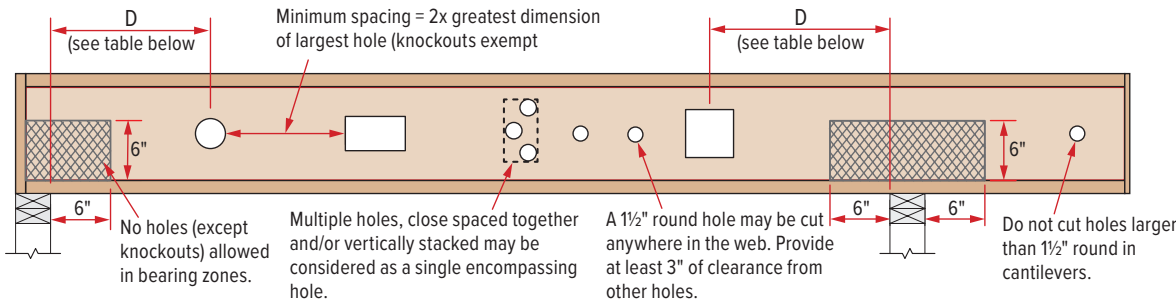
Joist Depth	AJS® Joist Series	L/480 Live Load Deflection Limit				L/600 Live Load Deflection Limit				L/360 Live Load Deflection Limit			
		12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.	12" o.c.	16" o.c.	19.2" o.c.	24" o.c.
9½"	AJS® 24	19'-11"	18'-2"	17'-2"	14'-6"	18'-5"	16'-9"	15'-10"	14'-6"	21'-5"	19'-1"	17'-5"	14'-6"
11⅞"	AJS® 24	23'-8"	21'-7"	18'-3"	14'-7"	21'-11"	19'-11"	18'-3"	14'-7"	25'-2"	21'-9"	18'-3"	14'-7"
14"	AJS® 24	26'-11"	22'-0"	18'-4"	14'-8"	24'-10"	22'-0"	18'-4"	14'-8"	27'-7"	22'-0"	18'-4"	14'-8"
16"	AJS® 24	29'-9"	22'-3"	18'-6"	14'-10"	27'-6"	22'-3"	18'-6"	14'-10"	29'-9"	22'-3"	18'-6"	14'-10"

- Tables are based on
 - residential floor load of 40 psf live load and 25 psf dead load.
 - 23/32" minimum plywood/OSB rated sheathing glued and nailed to joists.
 - the most restrictive of simple or multiple span applications. Analyze multiple span joists with BC Calc® sizing software if the length of any span is less than half the length of an adjacent span.
 - maximum allowable clear distance between supports.
 - minimum bearing lengths without web stiffeners.

- Floor tile will increase dead load and may require specific deflection limits, contact Boise Cascade EWP Engineering for further information.
- This table was designed to apply to a broad range of applications. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® sizing software.

Gold-shaded values may not satisfy the requirements of the North Carolina State Building Code. Refer to the L/480 table when spans exceed 20 feet.

Hole Location and Sizing



AJS® joists are manufactured with 1½" round perforated knockouts in the web at approximately 12" o.c. Minimum distance from support, listed in table below, is required for all holes greater than 1½".

Minimum Distance (D) From Any Support To The Centerline Of The Hole																
Round Hole Diameter			2"	3"	4"	5"	6"	6½"	7"	8"	8⅞"	9"	10"	11"	12"	13"
Rectangular Hole Side			—	—	2"	4"	6"	6"	—	—	—	—	—	—	—	—
Any 9½" Joist	Span	8'	2'-0"	2'-5"	2'-11"	3'-5"	3'-10"	4'-0"								
		12'	3'-0"	3'-8"	4'-5"	5'-1"	5'-10"	6'-0"								
		16'	4'-0"	4'-11"	5'-11"	6'-10"	7'-9"	8'-0"								
Round Hole Diameter			2"	3"	4"	5"	6"	6½"	7"	8"	8⅞"	9"	10"	11"	12"	13"
Rectangular Hole Side			—	—	—	2"	3"	4"	5"	7"	8"	—	—	—	—	—
Any 11⅞" Joist	Span	8'	1'-0"	1'-5"	1'-10"	2'-3"	2'-8"	2'-11"	3'-1"	3'-6"	3'-11"					
		12'	1'-5"	2'-1"	2'-9"	3'-5"	4'-0"	4'-4"	4'-8"	5'-4"	5'-11"					
		16'	1'-11"	2'-10"	3'-8"	4'-6"	5'-5"	5'-10"	6'-3"	7'-1"	7'-10"					
		20'	2'-5"	3'-6"	4'-7"	5'-8"	6'-9"	7'-3"	7'-10"	8'-11"	9'-10"					
Round Hole Diameter			2"	3"	4"	5"	6"	6½"	7"	8"	8⅞"	9"	10"	11"	12"	13"
Rectangular Hole Side			—	—	—	—	2"	3"	3"	5"	6"	6"	8"	9"	—	—
Any 14" Joist	Span	8'	1'-0"	1'-1"	1'-2"	1'-4"	1'-8"	1'-11"	2'-1"	2'-6"	2'-10"	2'-11"	3'-4"	3'-9"		
		12'	1'-0"	1'-1"	1'-4"	2'-0"	2'-7"	2'-11"	3'-2"	3'-10"	4'-4"	4'-5"	5'-0"	5'-7"		
		16'	1'-0"	1'-1"	1'-10"	2'-8"	3'-5"	3'-10"	4'-3"	5'-1"	5'-9"	5'-11"	6'-8"	7'-6"		
		20'	1'-0"	1'-3"	2'-4"	3'-4"	4'-4"	4'-10"	5'-4"	6'-4"	7'-3"	7'-4"	8'-5"	9'-5"		
		24'	1'-0"	1'-7"	2'-9"	4'-0"	5'-2"	5'-10"	6'-5"	7'-8"	8'-8"	8'-10"	10'-1"	11'-3"		
Round Hole Diameter			2"	3"	4"	5"	6"	6½"	7"	8"	8⅞"	9"	10"	11"	12"	13"
Rectangular Hole Side			—	—	—	—	—	—	2"	3"	5"	5"	6"	8"	9"	10"
Any 16" Joist	Span	8'	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-3"	1'-3"	1'-8"	2'-0"	2'-1"	2'-5"	2'-10"	3'-2"	3'-7"
		12'	1'-0"	1'-1"	1'-2"	1'-2"	1'-4"	1'-8"	1'-11"	2'-6"	3'-0"	3'-1"	3'-8"	4'-3"	4'-10"	5'-5"
		16'	1'-0"	1'-1"	1'-2"	1'-2"	1'-10"	2'-2"	2'-7"	3'-4"	4'-0"	4'-2"	4'-11"	5'-8"	6'-5"	7'-2"
		20'	1'-0"	1'-1"	1'-2"	1'-4"	2'-3"	2'-9"	3'-3"	4'-3"	5'-1"	5'-2"	6'-2"	7'-1"	8'-1"	9'-0"
		24'	1'-0"	1'-1"	1'-2"	1'-7"	2'-9"	3'-4"	3'-11"	5'-1"	6'-1"	6'-3"	7'-4"	8'-6"	9'-8"	10'-10"

HOW TO USE THIS TABLE

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

NOTES

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

One-Hour Fire Floor/Ceiling Assembly

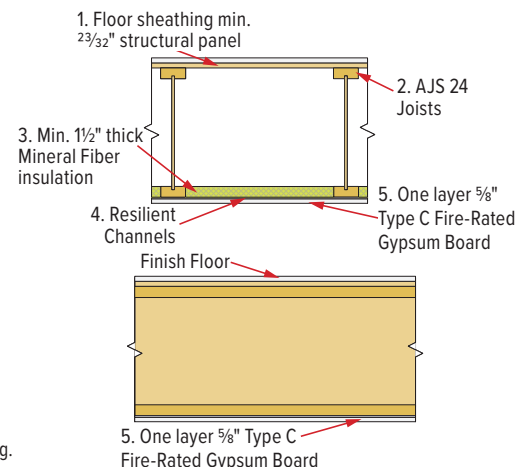
Fire Assembly Components

- Min. 23/32" thick tongue and groove sheathing (exterior glue), installed with long edge perpendicular to joist length, staggered one joist spacing with adjacent sheets, and glued to joists with construction adhesive.
- AJS® 24 joists at 24" o.c. or less.
- Min. 1½" Mineral Fiber Insulation, min. 2.8 pcf. Installed adjacent to the AJS bottom flange and supported by the furring channels.
- Min. 0.019" Galvanized Resilient Channel attached perpendicular to the bottom flange of the AJS Joists, installed per Assembly FR6 in APA® Product Report PR-S201.
- One layer 5/8" Type C gypsum board, installed per Assembly FR6 in APA® Product Report PR-S201.

Sound Ratings⁽¹⁾⁽²⁾

Joist/RC Spacing ⁽³⁾	Without Gypsum Concrete				With 1" (25 mm) Gypsum Concrete			
	Cushioned Vinyl		Carpet and Pad		Cushioned Vinyl		Carpet and Pad	
	STC	IIC	STC	IIC	STC	IIC	STC	IIC
24"/16" o.c.	48 (51)	42 (43)	48 (51)	61 (63)	63 (65)	50 (52)	63 (65)	65 (67)
16"/16" o.c.	44 (46)	37 (39)	44 (46)	60 (61)	56 (57)	46 (47)	56 (57)	58 (59)

- (1) Sound ratings from the American Wood Council publication Design for Code Acceptance (DCA) 3, available from www.awc.org.
- (2) STC and IIC values established by engineering analysis based on 1½" (38 mm) thick mineral wool batt insulation. Values in parentheses are based on 3½" (89 mm) thick mineral wool batt insulation.
- (3) STC and IIC values for 16" (406 mm) o.c. joist spacing are applicable to 19.2" (488 mm) o.c. joist spacing.



AJS Joist Design Properties

AJS® Joist Series	Joist Depth	Weight (PLF)	Moment (ft-lbs)	EI × 10 ⁶ (lb-in ²)	K × 10 ⁶ (lbs)	Shear (lbs)	End Reaction (lbs)				Intermediate Reaction (lbs)			
							1½" Bearing		3½" Bearing		3½" Bearing		5¼" Bearing	
							No WS ⁽¹⁾	WS ⁽²⁾	No WS ⁽¹⁾	WS ⁽²⁾	No WS ⁽¹⁾	WS ⁽²⁾	No WS ⁽¹⁾	WS ⁽²⁾
AJS® 24	9½"	3.1	4,005	270	5.3	1,160	950	1,240	1,175	1,480	2,600	2,850	2,600	2,850
	11⅞"	3.4	5,190	457	6.7	1,490	955	1,335	1,215	1,595	2,690	3,190	2,690	3,190
	14"	3.7	6,250	670	7.9	1,790	960	1,420	1,250	1,700	2,770	3,500	2,770	3,500
	16"	3.9	7,245	911	9.1	2,065	970	1,500	1,285	1,800	2,850	3,800	2,850	3,800

(1) No web stiffeners required.

(2) Web stiffeners required.

NOTES

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

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

Δ = deflection (in)

w = uniform load (lb/in)

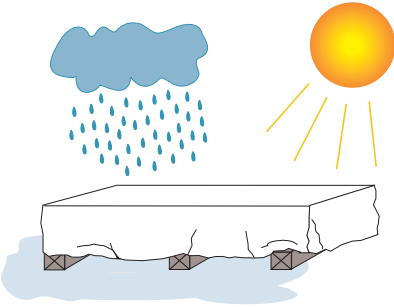
l = clear span (in)

EI = bending stiffness (lb-in²)

K = shear deformation coefficient (lb)

Code Evaluation Report: ICC-ES/APA ESR-1144 & APA PR-S201

Protect product from rain and sun.



PRODUCT STORAGE AND HANDLING

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

Limited Lifetime Warranty

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

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

NEED MORE INFORMATION?

Visit bc.com/ewp
or call 1-800-232-0788



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