

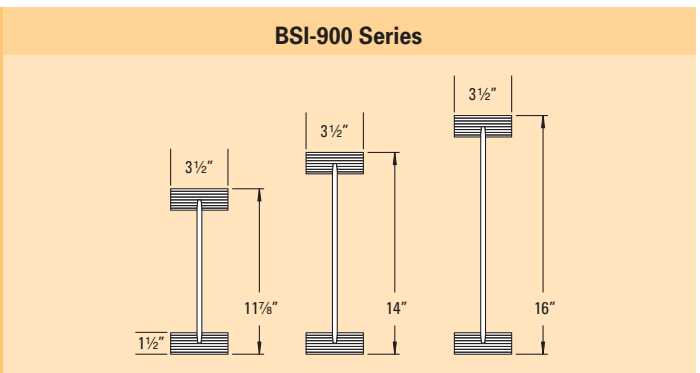
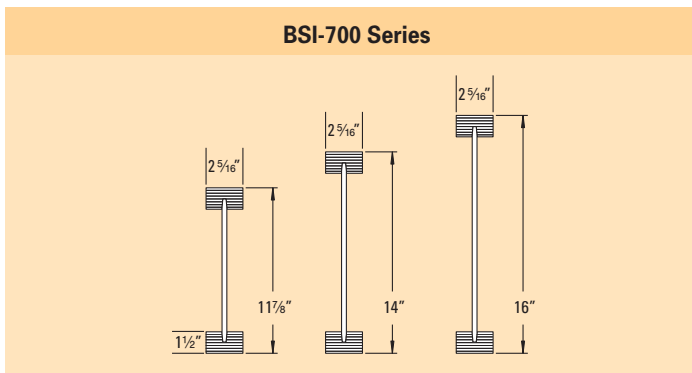
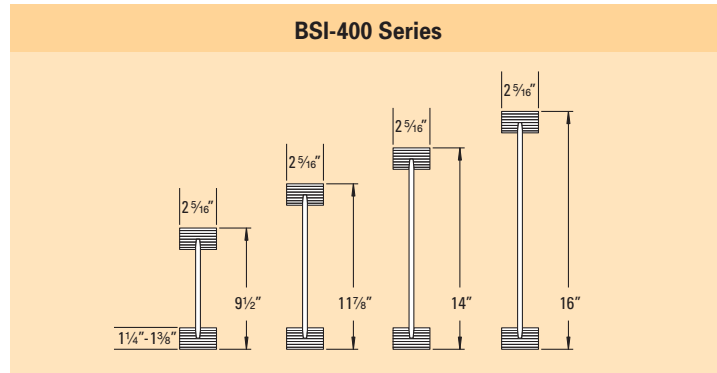


I-Joist Design Brochure

Design properties
for I-joist applications
in the U.S. for
residential floor
systems



Product Profiles



Referenced dimensions are nominal and are used for design purposes.




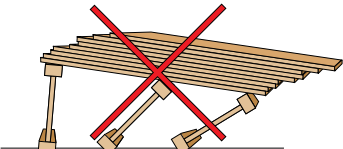
You're purchasing a premium Broadspan product – protect your investment! Proper care minimizes problems. Failure to follow good procedures for storage, handling and installation could result in unsatisfactory performance and unsafe structures. When handling Broadspan products use personal protective equipment for eyes, hands and feet.

Installation Notes

- A. Except for cutting to length and as shown in the User's Guide, top and bottom flanges of Broadspan I-joists shall not be cut, drilled or notched.
- B. End bearing length must be at least 1¾". Intermediate bearings of multiple span joists shall be at least 3½". Bearing on the edge of a single 2x ledger is not adequate.
- C. Engineered wood must not remain in direct contact with concrete or masonry construction and shall be used in covered, dry use conditions only (moisture content less than 16%).
- D. Broadspan I-joists must be restrained against rotation at the ends of joists by use of rim joists, blocking panels, hangers, or cross bridging. To laterally support cantilevered joists, blocking panels must also be installed over supports nearest the cantilever.
- E. Additionally, rim joists, rim boards, blocking panels or squash blocks must be provided under all stacking exterior and interior bearing walls to transfer loads from above to the wall or foundation below.
- F. Broadspan I-joists must be supported directly on walls, beams, girders, or in hangers. Do not support I-joists by a non-structural ridge board or other non-structural framing element. Do not toe nail I-joists into supports.
- G. At cantilevered floor sections, the I-joists and floor framing (not the closure board) must provide the primary support to walls above.
- H. The top flanges of the Broadspan I-joists must be laterally supported at intervals not exceeding 24" o.c. Plywood or OSB subfloor nailed to the top flange of a Broadspan I-joist is adequate to provide lateral support. The top flanges must be kept straight within ½" of true alignment.
- I. Broadspan I-joists are produced without camber so either face of the flange can be used as the top for sheathing attachment and the location of identifying stamps does not affect performance. Vertically orient the largest dimension of the I-joist.
- J. Fasteners, hangers or connectors for Broadspan framing either from or into preservative or fire-retardant treated wood must be hot-dip galvanized, or stainless steel, as required by code and the type of treatment.
- K. Treating Broadspan I-joists is not recommended and voids the warranty, but more importantly, presents a safety and performance concern.
- L. When using hangers, seat I-joists firmly in hanger bottoms to minimize settlement. Provide a gap between the I-joist end and the hanger per hanger manufacturer recommendations.
- M. Concentrated loads shall only be applied to the upper surface of the top flange, not suspended from the bottom flange. Contact Broadspan representative for exceptions.
- N. Any fastening, resistance to uplift or member not specifically detailed is subject to local approval.

Safety & Construction Precautions

INSTALLATION

1. Walking on the joists should not be permitted until they are properly braced. 
2. Lateral restraint, such as an existing deck or braced end wall, must be established at the ends of the bay. Alternatively, temporary or permanent sheathing may be nailed to the first 4 feet of the joists at the end of the bay.
3. All hangers, rim boards, rim joists and blocking at the supports of the joists must be installed and nailed properly.
4. During installation, a minimum 1x4 temporary brace at least 8 feet long is required. Temporary bracing members should be spaced at no further than 10'-0" o.c. and nailed to each joist with two 8d nails (10d box nails if bracing thickness exceeds 1"). Lap bracing ends and anchor them to temporary or permanent sheathing. Remove the temporary bracing as the permanent sheathing is attached.
5. The ends of cantilevers must be temporarily braced on both the top and bottom flanges.
6. Never overload sheathed joists with loads that exceed design loads.
7. Do not ship or install any damaged I-joists.
8. Do not splice I-joists like dimension lumber. I-joists ends, except at cantilevers, must butt over a support that provides the bearing required by each end of the I-joist.
9. When stacking construction material, stack only over beams or walls, NOT on unsheathed joists. 

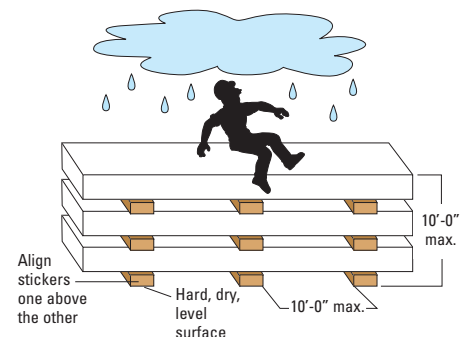
STORAGE

1. Store bundles upright on a smooth, level, well-drained and supportive surface to protect from the weather (sun and precipitation). Keep covered and strapped until installed.
2. Keep bundles above ground to minimize the absorption of ground moisture and allow air circulation.
3. Re-cover unused products with bundle wrap. Repair damage to bundle wrap with tape, more bundle wrap, plastic or weatherproof covering.
4. Place 2x or LVL spacers (at a maximum of 10' apart) under bundles stacked on the ground, and between bundles stored on top of one another.

HANDLING

1. All handling of joists with a forklift or crane should be done carefully by lifting from below the bottom of the bundle.
2. Joists should remain upright (web vertical) during handling.
3. Avoid excessive bowing during all phases of handling and installation (i.e., measuring, sawing, or placement).
4. Damage may result if the I-joist is twisted or a load is applied to it while it's lying flat.
5. An MSDS is available at www.gp.com/build/broadspan.html.

CAUTION:
Wrap and I-joists are slippery when icy or wet



NOTE: These are general recommendations and in some cases, additional precautions may be required.

Design Properties

Broadspan Joist Series	Depth	EI ⁽²⁾ (10 ⁶ in. ² -lbs)	M ⁽³⁾ (ft-lbs)	V ⁽⁴⁾ (lbs)	IR ⁽⁵⁾ (lbs)	ER ⁽⁶⁾ (lbs)	K ⁽⁷⁾ (10 ⁶ lbs)
BSI-400	9½"	204	3250	1200	2600	1120	4.94
	11⅞"	346	4200	1460	2600	1225	6.18
	14"	505	5050	1715	2600	1250	7.28
	16"	694	5850	1990	2600	1235	8.32
BSI-700	11⅞"	435	6825	1600	3000	1275	6.18
	14"	638	8135	1800	3000	1300	7.28
	16"	868	9320	2050	3000	1350	8.32
BSI-900	11⅞"	663	10480	1950	3800	1500	6.18
	14"	968	12500	2240	3800	1500	7.28
	16"	1317	14325	2330	3950	1650	8.32

NOTES

- The tabulated design values are for normal duration of load. All values except for EI and K are permitted to be adjusted for code prescribed load durations.
- Allowable bending stiffness (EI) of the I-joist.
- Allowable moment capacity (M) of the I-joist; **SHALL NOT** be increased by any code allowed repetitive member use factor.
- Allowable shear capacity (V) of the I-joist.
- Allowable intermediate reaction (IR) of the I-joist with a minimum bearing length of 3 1/2" without bearing stiffeners.
- Allowable end reaction (ER) of the I-joist with a minimum bearing length of 1 3/4" without bearing stiffeners. Higher end reactions are permitted. For a bearing length of 4", the end reaction may be set equal to the allowable shear value. Linear interpolation of the end reaction between 1¾" and 4" bearing is permitted. For end reaction values greater than 1550 lbs (1900 lbs for BSI-900), bearing stiffeners are required.
- Coefficient of shear deflection (K), used to calculate deflections for I-joist applications. Equations 1 and 2 below are provided for uniform load and center point load conditions for simple spans.

Uniform Load:

$$[1] \delta = \frac{5\omega\ell^4}{384EI} + \frac{\omega\ell^2}{K}$$

Center-Point Load:

$$[2] \delta = \frac{P\ell^3}{48EI} + \frac{2P\ell}{K}$$

where:

δ = calculated deflection (in.) P = concentrated load (lbs)
 ω = uniform load (lbs/in.) EI = bending stiffness of the I-joist (in²-lbs)
 ℓ = design span (in.) K = coefficient of shear deflection (lbs)

Allowable Floor Spans

Live Load = 40 psf, Dead Load = 10 psf

Broadspan Joist Series	Depth	Simple-Span				Multiple-Span			
		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.
BSI-400	9½"	18' - 3"	16' - 8"	15' - 9"	14' - 9"	19' - 11"	18' - 2"	17' - 2"	15' - 11"
	11⅞"	21' - 9"	19' - 10"	18' - 9"	17' - 6"	23' - 8"	21' - 7"	20' - 3"	18' - 1"
	14"	24' - 8"	22' - 6"	21' - 3"	19' - 10"	26' - 10"	24' - 5"	22' - 3"	19' - 11"
	16"	27' - 4"	25' - 0"	23' - 7"	21' - 6"	29' - 10"	26' - 3"	24' - 0"	20' - 7"
BSI-700	11⅞"	23' - 3"	21' - 3"	20' - 0"	18' - 8"	25' - 4"	23' - 1"	21' - 9"	20' - 4"
	14"	26' - 5"	24' - 1"	22' - 9"	21' - 2"	28' - 9"	26' - 3"	24' - 9"	23' - 0"
	16"	29' - 3"	26' - 8"	25' - 2"	23' - 5"	31' - 11"	29' - 1"	27' - 5"	23' - 9"
BSI-900	11⅞"	26' - 4"	24' - 0"	22' - 7"	21' - 0"	28' - 8"	26' - 1"	24' - 6"	22' - 9"
	14"	29' - 11"	27' - 2"	25' - 7"	23' - 10"	32' - 7"	29' - 7"	27' - 10"	25' - 10"
	16"	33' - 1"	30' - 2"	28' - 4"	26' - 4"	36' - 1"	32' - 10"	30' - 10"	28' - 8"

Live Load = 40 psf, Dead Load = 20 psf

Broadspan Joist Series	Depth	Simple-Span				Multiple-Span			
		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.
BSI-400	9½"	18' - 3"	16' - 8"	15' - 9"	14' - 7"	19' - 11"	17' - 10"	16' - 3"	14' - 6"
	11⅞"	21' - 9"	19' - 10"	18' - 7"	16' - 7"	23' - 5"	20' - 3"	18' - 6"	16' - 6"
	14"	24' - 8"	22' - 4"	20' - 4"	18' - 2"	25' - 9"	22' - 3"	20' - 4"	17' - 1"
	16"	27' - 4"	24' - 0"	21' - 11"	19' - 7"	27' - 9"	24' - 0"	21' - 5"	17' - 1"
BSI-700	11⅞"	23' - 3"	21' - 3"	20' - 0"	18' - 8"	25' - 4"	23' - 1"	21' - 9"	19' - 9"
	14"	26' - 5"	24' - 1"	22' - 9"	21' - 2"	28' - 9"	26' - 3"	24' - 9"	19' - 9"
	16"	29' - 3"	26' - 8"	25' - 2"	22' - 4"	31' - 11"	29' - 1"	24' - 9"	19' - 9"
BSI-900	11⅞"	26' - 4"	24' - 0"	22' - 7"	21' - 0"	28' - 8"	26' - 1"	24' - 6"	22' - 9"
	14"	29' - 11"	27' - 2"	25' - 7"	23' - 10"	32' - 7"	29' - 7"	27' - 10"	25' - 0"
	16"	33' - 1"	30' - 2"	28' - 4"	26' - 4"	36' - 1"	32' - 10"	30' - 10"	26' - 1"

NOTES

(Clear Spans, L/480 Live Load, L/240 Total Load)

- These spans are limited to L/480 live load deflection (for better performance) and L/240 total load deflection. The spans are based on uniform loads only, as noted for each table. Floor performance is greatly influenced by the stiffness of the floor joists. Experience has shown that joists designed to the code minimum (L/360) live load deflection will result in a floor which may not meet the expectations of some end users. Limiting the floor spans for Broadspan I-joists to those given above (with L/480 live load deflection) is recommended.
- Maximum spans shown above are clear distances between supports, and are based on composite action with glue-nailed 23/32" nominal (48/24) APA Rated sheathing. Sheathing fastened with glue and nails or glue and screws is recommended over nailing only. If sheathing is nailed only (not recommended), reduce spans by 12".
- Minimum end bearing length is 1¾". Minimum intermediate bearing length is 3½".
- End spans of multiple-span joists must be at least 40% of the adjacent span.
- For loading other than that shown above, refer to Uniform Load Tables or software.
- Web stiffeners are not required to attain the tabulated spans for the given loading conditions.

Cantilever Application Details

Cantilevers for Vertical Building Offsets (Concentrated Wall Load From Above)

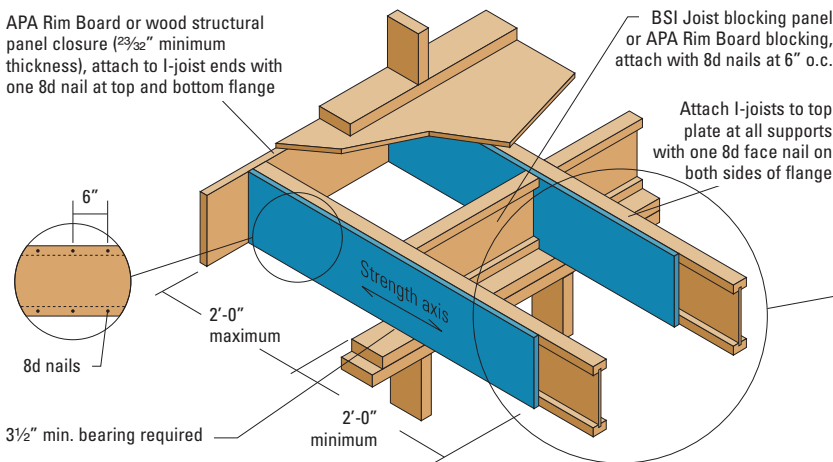
Method 1

Sheathing Reinforcement – One Side

APA Rim Board or wood structural panel closure ($\frac{23}{32}$ " minimum thickness), attach to I-joist ends with one 8d nail at top and bottom flange

BSI Joist blocking panel or APA Rim Board blocking, attach with 8d nails at 6" o.c.

Attach I-joists to top plate at all supports with one 8d face nail on both sides of flange



$3\frac{1}{2}$ " min. bearing required

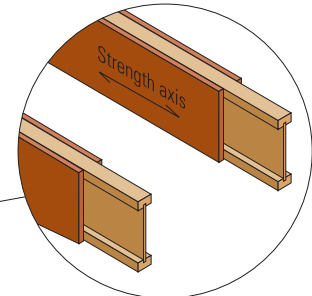
2'-0" minimum

Note: Wood structural panel, APA Rated® Sheathing 48/24 (minimum thickness $\frac{23}{32}$ ") or APA Rim Board required on sides of joist. Depth shall match the full height of the joist. Nail with 8d nails at 6" o.c., top and bottom flange. Install with strength axis horizontal. Attach I-joist to plate at all supports with one 8d face nail on both sides of flange.

Method 2

Sheathing Reinforcement – Two Sides

Use same installation as Method 1 but reinforce both sides of I-joist with sheathing or APA Rim Board



Use nailing pattern shown for Method 1 with opposite face nailing offset by 3"

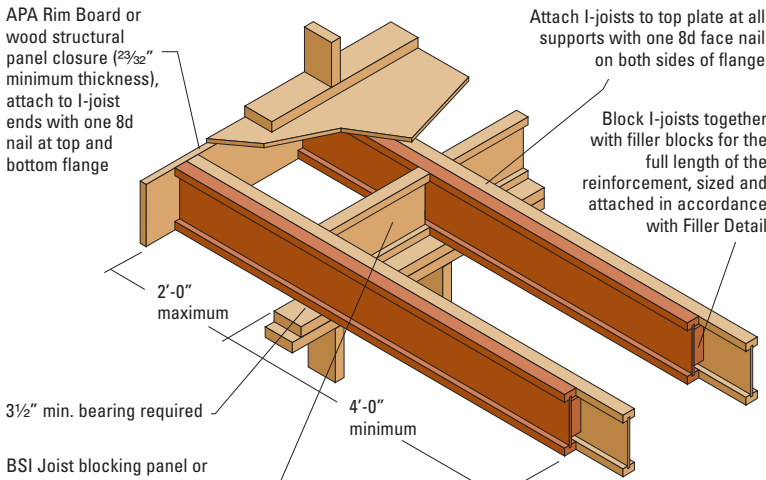
Alternate Method 2

I-Joist Reinforcement – One Side

APA Rim Board or wood structural panel closure ($\frac{23}{32}$ " minimum thickness), attach to I-joist ends with one 8d nail at top and bottom flange

Attach I-joists to top plate at all supports with one 8d face nail on both sides of flange

Block I-joists together with filler blocks for the full length of the reinforcement, sized and attached in accordance with Filler Detail



$3\frac{1}{2}$ " min. bearing required

4'-0" minimum

BSI Joist blocking panel or APA Rim Board blocking, attach with 8d nails at 6" o.c.

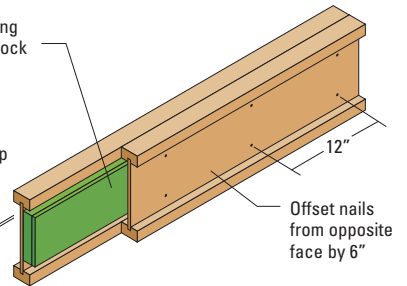
Filler Detail

I-Joist Reinforcement – One Side

Filler blocking per Filler Block Size table

$\frac{1}{8}$ " gap between top flange and filler block

Offset nails from opposite face by 6"



NOTES:

1. Support back of I-joist web during nailing to prevent damage to web/flange connection.
2. Leave a $\frac{1}{8}$ " gap between top of filler block and bottom of top I-joist flange.
3. Filler must be one continuous piece extending the full length of the double I-joist reinforcement.
4. Fasten joists together with two rows of 10d (16d for BSI 900) minimum nails at 12" o.c. from each side, clinching nails when possible. A total of 4 nails per foot is required if nails cannot be fully clinched and 2 nails per foot if fully clinched.

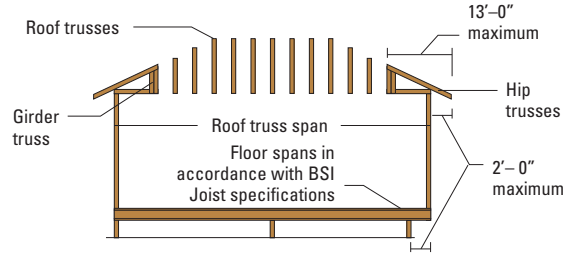
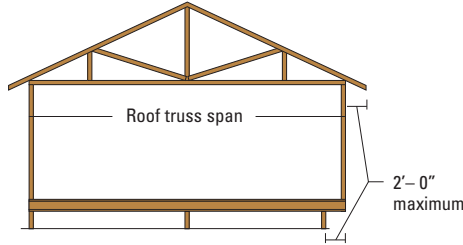
Filler Block Size for I-Joist Reinforcement – One Side

Flange Width	Joist Series	Depth	Filler Block Size	
			Overall Dimensions	Allowable Lumber Combinations
2 $\frac{5}{16}$ "	BSI-400	9 $\frac{1}{2}$ "	1 $\frac{7}{8}$ " x 6"	2x6 + $\frac{3}{8}$ " WSP*
		11 $\frac{7}{8}$ "	1 $\frac{7}{8}$ " x 8"	2x8 + $\frac{3}{8}$ " WSP*
	BSI-400, BSI-700	14"	1 $\frac{7}{8}$ " x 10"	2x10 + $\frac{3}{8}$ " WSP*
		16"	1 $\frac{7}{8}$ " x 12"	2x12 + $\frac{3}{8}$ " WSP*
3 $\frac{1}{2}$ "	BSI-900	11 $\frac{7}{8}$ "	3" x 8"	(2) 2x8
		14"	3" x 10"	(2) 2x10
		16"	3" x 12"	(2) 2x12

* WSP = wood structural panel (OSB, plywood, etc.)

Cantilever Reinforcement

See table below for BSI Joist reinforcement requirements at cantilever.



For hip roofs with the hip trusses running parallel to the cantilevered floor joists, the I-joist reinforcement requirements for a span of 26' may be used.

Joist Depth (in)	Roof Truss Span (ft)	Roof Loadings											
		TL = 35 psf LL not to exceed 20 psf				TL = 45 psf LL not to exceed 30 psf				TL = 55 psf LL not to exceed 40 psf			
		Joist Spacing (in)				Joist Spacing (in)				Joist Spacing (in)			
		12	16	19.2	24	12	16	19.2	24	12	16	19.2	24
9½	26	N	N	N	1	N	N	N	2	N	N	1	X
	28	N	N	N	1	N	N	1	2	N	1	2	X
	30	N	N	N	1	N	N	1	2	N	1	2	X
	32	N	N	N	1	N	N	1	2	N	1	2	X
	34	N	N	N	1	N	N	1	X	N	1	2	X
	36	N	N	1	2	N	1	2	X	N	2	X	X
11⅞	26	N	N	N	N	N	N	N	1	N	N	N	1
	28	N	N	N	N	N	N	N	1	N	N	1	1
	30	N	N	N	N	N	N	N	1	N	N	1	2
	32	N	N	N	N	N	N	N	1	N	N	1	2
	34	N	N	N	1	N	N	N	1	N	N	1	2
	36	N	N	N	1	N	N	1	1	N	1	1	2
	38	N	N	N	1	N	N	1	2	N	1	1	X
14	26	N	N	N	N	N	N	N	N	N	N	N	1
	28	N	N	N	N	N	N	N	N	N	N	N	1
	30	N	N	N	N	N	N	N	1	N	N	N	1
	32	N	N	N	N	N	N	N	1	N	N	N	1
	34	N	N	N	N	N	N	N	1	N	N	1	1
	36	N	N	N	N	N	N	N	1	N	N	1	1
	38	N	N	N	1	N	N	N	1	N	N	1	2
	40	N	N	N	1	N	N	N	1	N	N	1	2
16	26	N	N	N	N	N	N	N	N	N	N	N	1
	28	N	N	N	N	N	N	N	1	N	N	N	1
	30	N	N	N	N	N	N	N	1	N	N	N	1
	32	N	N	N	N	N	N	N	1	N	N	N	1
	34	N	N	N	N	N	N	N	1	N	N	1	1
	36	N	N	N	1	N	N	N	1	N	N	1	2
	38	N	N	N	1	N	N	N	1	N	N	1	2
	40	N	N	N	1	N	N	N	1	N	N	1	2
	42	N	N	N	1	N	N	1	1	N	N	1	2

NOTES

- N = No I-joist reinforcing required.
 - BSI Joists reinforced with minimum 23/32" wood structural panel or APA Rim Board on one side only. See Method 1 detail on page 6.
 - BSI Joists reinforced with minimum 23/32" wood structural panel or APA Rim Board on two sides or double I-joist reinforcer. See Method 2 or Alternate Method 2 detail on page 6.
- X = Try a deeper joist or closer spacing.
- Color coding in table is matched to the cantilever details on page 6.
- Maximum load shall be: 15 psf roof dead load, 50 psf floor total load, and 80 plf wall load. Wall load is based on 3'-0" maximum width window or door openings.

For larger openings, or multiple 3'-0" width openings spaced less than 6'-0" o.c., additional joists beneath the opening's cripple studs may be required.

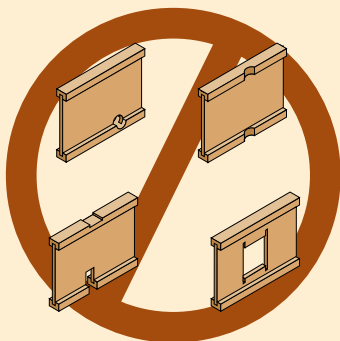
- Table assumes maximum joist simple spans and applies to joists 12" to 24" o.c. Use 12" o.c. requirements for lesser spacings.
- The required cantilever reinforcement for the loading conditions given in this table are conservative for conventional framing (stick built) roofs that are braced to interior supports. For roofs with a ridge board, use the roof truss span as the span between rafter support walls. For roofs with a ridge beam, use the roof truss span as the span between the rafter support wall and the ridge beam.

Web Hole Specifications

One of the benefits of using I-joists in residential floor construction is that holes may be easily cut in the joist webs to accommodate electrical wiring, plumbing lines and other mechanical systems, therefore minimizing the depth of the floor system.

Rules for cutting holes in BSI Joists

1. The distance between the inside edge of the support and the centerline of any hole shall not be less than that shown in the hole table on page 9.
2. Except for cutting to length, I-joist top and bottom flanges must NEVER be cut, notched, or otherwise modified.
3. Holes may be located anywhere vertically in the web only. Whenever possible, center holes in the web and always maintain at least $\frac{1}{8}$ " of the web at the top and bottom of the hole. The maximum size hole that can be cut into an I-joist web shall equal the clear distance between the flanges of the I-joist minus $\frac{1}{4}$ ".
4. The sides of square holes or longest sides of rectangular holes should not exceed three-fourths (75%) of the maximum round hole diameter permitted at that location. (For example, if a 10" diameter round hole is permitted, then the longest side of a rectangular hole cannot exceed $10" \times 0.75 = 7\frac{1}{2}"$.) Do not over-cut the sides or corners of rectangular holes.
5. Where more than one hole is necessary, the distance between nearest hole edges shall exceed twice the diameter of the largest round hole or twice the size of the largest square hole (or twice the length of the longest side of the longest rectangular hole). Each hole must comply with the requirements of the hole table on page 9.
6. A knockout may be utilized anywhere it occurs and may be ignored for purposes of calculating minimum distances between holes.
7. A $1\frac{1}{2}$ " hole can be placed anywhere in the web, including a cantilevered joist section, provided that it meets the requirements of 5 above, and does not penetrate required cantilever reinforcement.
8. For joists with more than one span, use the longest span to determine hole location in either span. For large differences in adjacent span lengths, use software to determine allowable hole locations.
9. Limit 3 maximum size holes per span.
10. A group of round holes at approximately the same location shall be permitted if they meet requirements for a single round hole circumscribed around them.

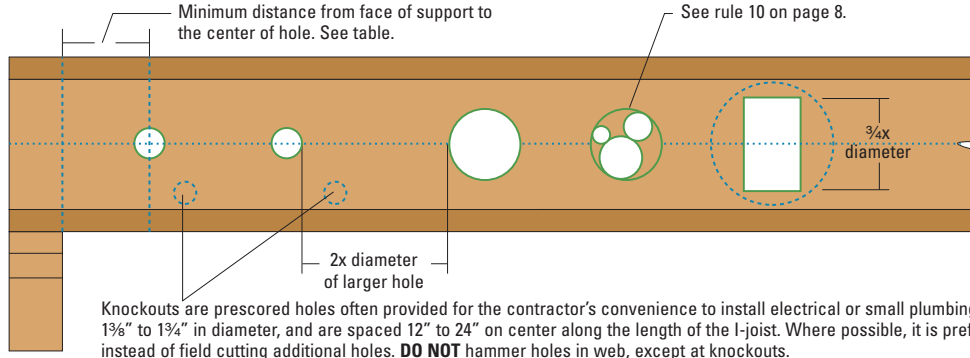


Never drill, cut or notch the flange, or over-cut the web.

Holes in webs should be cut with a sharp saw or drill bit, not by hammering.

For rectangular holes, avoid over cutting the corners, as this can cause unnecessary stress concentrations. Slightly rounding the corners is recommended. Start the rectangular hole by drilling a 1" diameter hole in each of the four corners and then make the cuts between the holes to minimize damage to I-joist.

Typical Holes



Minimum Distance from Face of Joist Supports to Center of Hole – Worst Case Single or Multiple Span, 40 psf Live Load and 10 or 20 psf Dead Load

I-Joist Depth	Broadspan Joist Series	Span Adjustment Factor	Round Hole Diameter (in.)														
			2	3	4	5	6	6 1/4	7	8	8 5/8	9	10	10 3/4	11	12	12 3/4
			Minimum Distance from Inside Face of Joist Supports to Center of Hole (ft.-in.)														
9 1/2"	BSI-400	14'-6"	1'-6"	2'-6"	4'-0"	5'-0"	6'-6"	7'-0"									
	BSI-400	16'-6"	1'-0"	1'-6"	2'-6"	4'-0"	5'-0"	5'-6"	6'-0"	8'-0"	9'-0"						
11 7/8"	BSI-700	18'-8"	1'-6"	3'-0"	4'-0"	5'-6"	6'-6"	7'-0"	8'-0"	9'-6"	10'-6"						
	BSI-900	21'-0"	1'-0"	2'-6"	4'-0"	5'-6"	7'-0"	7'-6"	8'-6"	10'-6"	11'-6"						
14"	BSI-400	17'-1"	1'-0"	1'-0"	1'-0"	2'-0"	3'-0"	3'-6"	4'-6"	6'-0"	7'-0"	7'-6"	9'-0"	11'-0"			
	BSI-700	19'-9"	1'-0"	1'-0"	2'-6"	4'-0"	5'-6"	5'-6"	7'-0"	8'-6"	9'-6"	10'-0"	12'-0"	13'-0"			
	BSI-900	23'-10"	1'-0"	1'-6"	3'-0"	4'-0"	5'-6"	6'-0"	7'-0"	8'-6"	9'-6"	10'-6"	12'-6"	14'-0"			
16"	BSI-400	17'-1"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	1'-0"	2'-0"	3'-6"	4'-6"	5'-0"	6'-6"	8'-0"	8'-6"	10'-6"	12'-6"
	BSI-700	19'-9"	1'-0"	1'-0"	1'-0"	1'-0"	2'-6"	3'-0"	4'-6"	6'-0"	7'-0"	8'-0"	9'-6"	11'-0"	11'-6"	13'-6"	15'-0"
	BSI-900	26'-1"	1'-0"	1'-0"	2'-0"	3'-6"	4'-6"	5'-0"	6'-6"	8'-0"	9'-0"	9'-6"	11'-6"	13'-0"	13'-6"	15'-6"	17'-0"

NOTES

- Above tables may be used for I-joist spacing of 24" on center or less.
- Hole location distance is measured from inside face of supports to center of hole. The minimum distance should be satisfied from both supports of the span where the hole is located.
- Distances in this table are based on uniformly loaded joists that meet the span requirements in the page 5 span tables.
- For joists with more than one span, use the longest span to determine hole location in either span. For large differences in adjacent span lengths, use software to determine allowable hole locations.

OPTIONAL MINIMUM DISTANCE REDUCTION

The above table is based on the I-joists being used at their maximum span. If the I-joists are placed at less than their full allowable span as shown in the page 5 span tables, the minimum distance from the centerline of the hole to the face of the joist supports (D) as given above may be reduced as follows, but cannot be less than given in the "Limit Table for Reducing Minimum Distance".

$$D_{\text{reduced}} = \frac{L_{\text{actual}} \times D}{\text{SAF}}$$

Where:

D_{reduced} = Distance from the inside face of the joist supports to center of hole, reduced for less-than-maximum span applications (ft).

L_{actual} = The actual measured span distance between the inside faces of supports (ft).

SAF = Span Adjustment Factor given in table above.

D = The minimum distance from the inside face of the joist supports to the center of hole from table above.

Note: If $\frac{L_{\text{actual}}}{\text{SAF}}$ is greater than 1.0, use $\frac{L_{\text{actual}}}{\text{SAF}} = 1.0$ in the above calculation for D_{reduced} .

LIMIT TABLE FOR REDUCING MINIMUM DISTANCE

When calculating hole locations by this optional method, the following limits for minimum distances between the center of the hole and the inside face of the joist supports apply:

Round Hole Diameter	Minimum Distance	Round Hole Diameter	Minimum Distance	Round Hole Diameter	Minimum Distance
2"	0'-6"	6 1/4"	1'-6"	10"	1'-6"
3"	0'-6"	7"	1'-6"	10 3/4"	1'-6"
4"	1'-0"	8"	1'-6"	11"	1'-6"
5"	1'-0"	8 5/8"	1'-6"	12"	1'-6"
6"	1'-0"	9"	1'-6"	12 3/4"	2'-0"

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