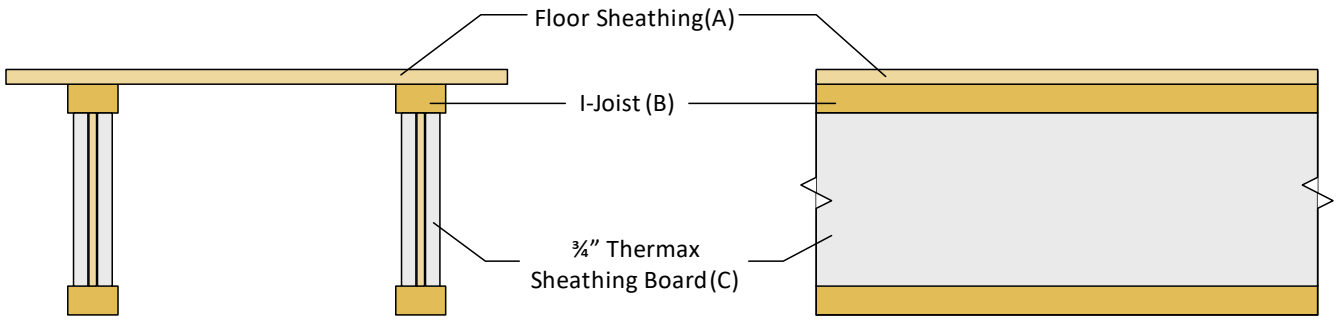
Boise Cascade®
ENGINEERED WOOD PRODUCTS

AJS® 24 FMJ Joist for Fire Protection of Floors Installation Guide

AJS® 24 FMJ Installation Guide

Materials

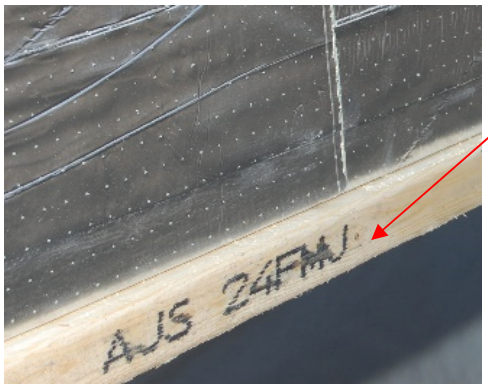


A. **Floor Sheathing**: Materials and installation per IRC® Section R503

B. **AJS® Joists** (marked with "FMJ" after series number within grade stamp on flange; see photo below).
   - APA® PR-S201 & ICC-ES® ESR-1144

C. **Factory-applied proprietary THERMAX™ Sheathing Board:** One layer of ¾" thick THERMAX™ sheathing board is adhered to each side of the AJS® web.

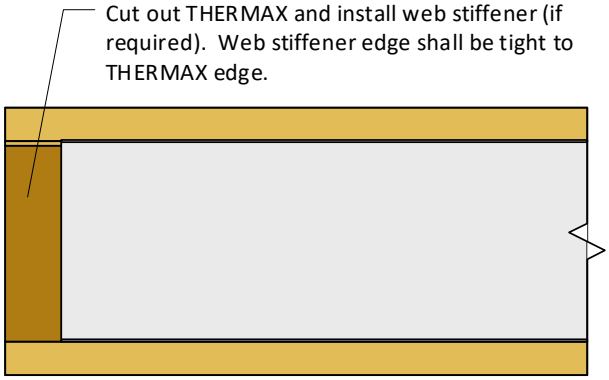
Field Indentification:



Each joist marked "AJS 24 FMJ", along with the inspection agency name

Joist Spacing and Web Stiffeners

- Maximum joist spacing = 24" o.c.
- **Web Stiffeners:** Remove portion of THERMAX™ sheathing at web stiffener location (wear a dust mask and eye protection during removal). Install web stiffener tight to edge of existing THERMAX™. Nail and clinch web stiffeners per AJS® Installation Guide.



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Allowable Hole Instructions and Hole Repairs

► **Cutting Web Holes**: Cut in a workmanlike manner. Wear a dust mask and eye protection while cutting product. Hole size and location per web hole location table shown on page 8 or BC Calc® sizing software.

Recommended Methods:

- **Smaller Holes:** Drill or spade bits. Minor tearing on backside of foil may occur.
- **Larger Holes:** Self-feed bit or reciprocating saw (use drill for starter hole). Minor tearing on backside of foil may occur.
- **Hole Saws:** Use a pilot hole and cut thru THERMAX™ and portion of OSB web, then finish the cut from backside using the pilot hole as a guide. Minor tearing on backside of foil may occur. Larger tearing may occur when cutting from only one side.

► **AJS® 24 Web Hole Location Table**

Minimum Distance 'D' From Any Support to the Centerline of the Hole															
Round Hole Diameter [in]			2	3	4	5	6	6-1/2	7	8	8-7/8	9	10	11	12	13
Rectangular Hole Side [in]			-	-	2	4	6	6	-	-	-	-	-	-	-	-
Any 9-1/2" Joist	Span [ft]	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 [in]			2	3	4	5	6	6-1/2	7	8	8-7/8	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	2	3	4	5	7	8	-	-	-	-	-
Any 11-7/8" Joist	Span [ft]	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 [in]			2	3	4	5	6	6-1/2	7	8	8-7/8	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	-	2	3	3	5	6	6	8	9	-	-
Any 14" Joist	Span [ft]	8	1'-0"	1'-1"	1'-2"	1'-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 [in]			2	3	4	5	6	6-1/2	7	8	8-7/8	9	10	11	12	13
Rectangular Hole Side [in]			-	-	-	-	-	-	2	3	5	5	6	8	9	10
Any 16" Joist	Span [ft]	8	1'-0"	1'-1"	1'-2"	1'-2"	1'-3"	1'-3"	1'-3"	1'-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"

- Select a table row based on joist depth and the actual joist span rounded up to the nearest table span. Scan across the row to the column headed by the appropriate round hole diameter or rectangular hole side. Use the longest side of a rectangular hole. The table value is the closest that the centerline of the hole may be to the centerline of the nearest support.
- The entire web may be cut out if allowed per table. DO NOT cut the flanges. Holes apply to either single or multiple joists in repetitive member conditions.
- For multiple holes, the amount of uncut web between holes must equal at least twice the diameter (or longest side) of the largest hole.
- Holes may be positioned vertically anywhere in the web, provided they don't extend into either flange.
- This table was designed to apply to design conditions covered by uniform load PLF tables only, shown elsewhere in AJS 24 literature. Use BC Calc® software to check other hole sizes or holes under other design conditions, including joists supporting concentrated loads. It may be possible to exceed the limitations of this table by analyzing a specific application with the BC Calc® software.

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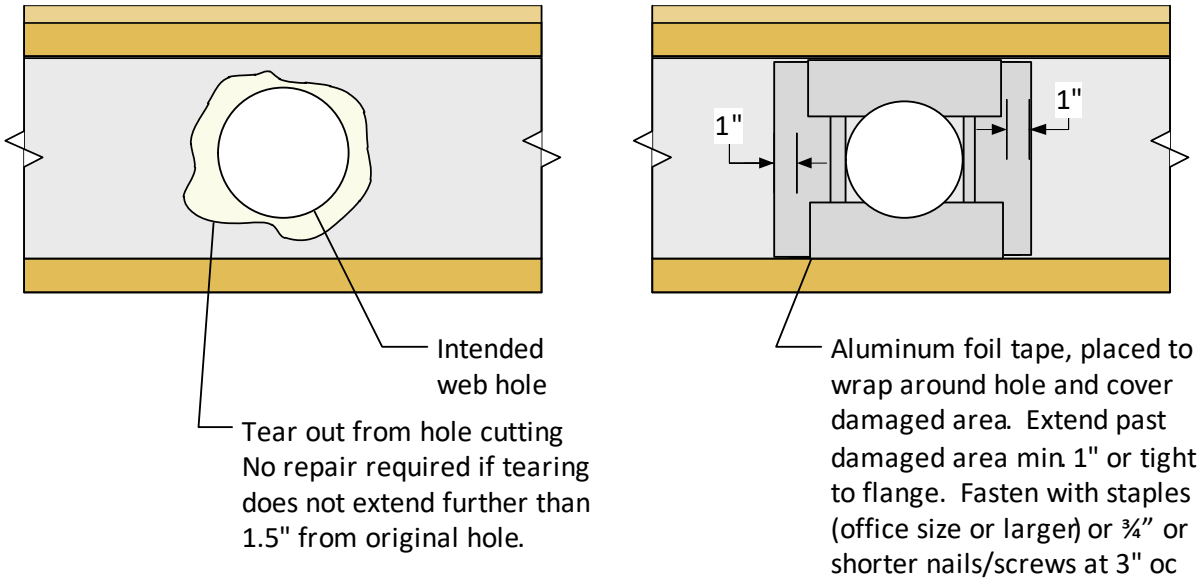
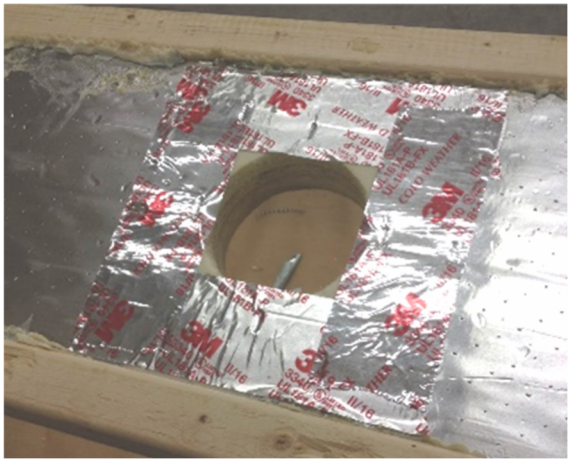
► **Web Hole Repairs:** For cuts that produce significant tearing of foam and/or foil on either side of the joist (greater than 1 ½" from hole edge), provide fire resistance reinforcement with either aluminum foil tape, min. ½" gypsum board, min. 5/8" OSB or plywood, or min. ¾" THERMAX™ sheathing as shown in the following details:





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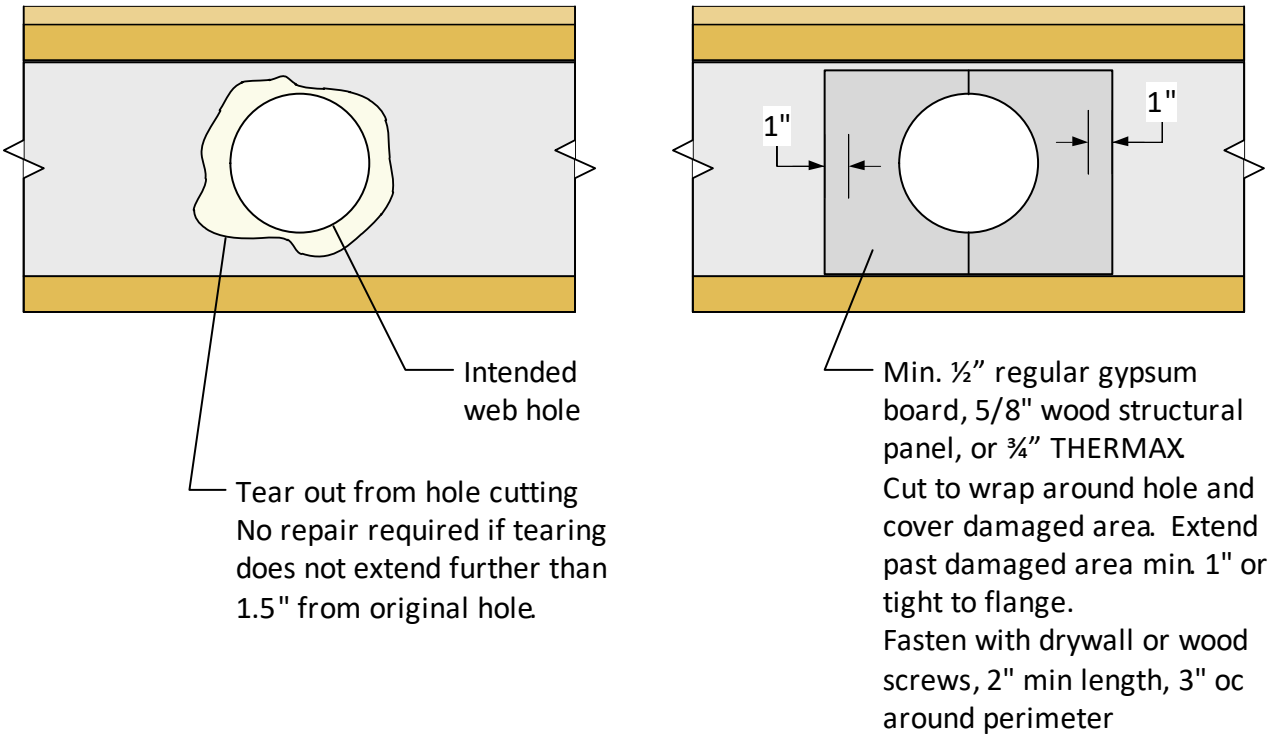
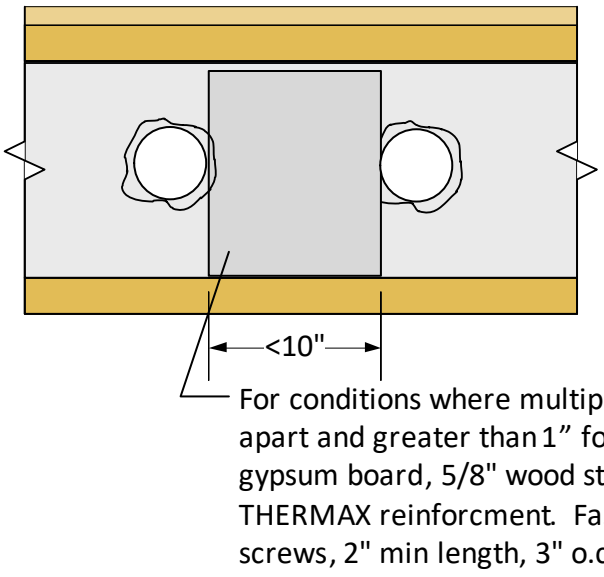


- **Multiple Hole Reinforcement:** For holes closer than 10" (edge to edge) with foil tearing exceeding 1", install ½" gypsum board, min. 5/8" structural wood panel or ¾" THERMAX™ between holes for reinforcement. Note that holes should not be closer edge to edge than the twice the greater dimension of the holes for structural limits.



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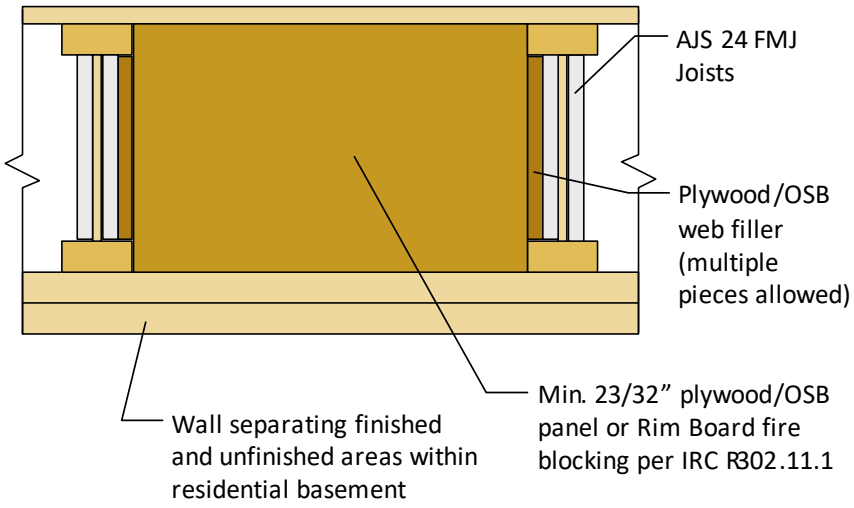
Fireblocking at Finished/Unfinished Boundaries

- Only required at finished/unfinished basement boundary areas.
- Web filler to fill gap between joist web and blocking, 3" min width.



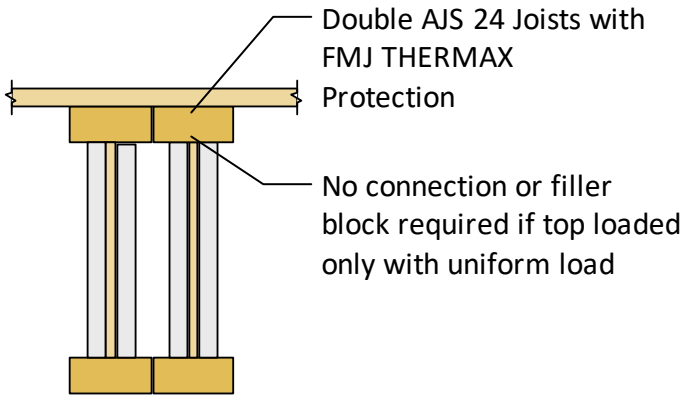
- AJS® 24 FMJ joists may be installed as fire blocking in place of min. 23/23" plywood/OSB or rim board, if gaps filled with plywood/OSB, gypsum board or THERMAX™.
- Fasten gap filler with (2) nails or screws through THERMAX™ into AJS® web.

Blocking / Bridging

- Span Blocking / Bridging for Floor Performance Improvement: Since span blocking / bridging is not a floor load transfer element, non-FMJ AJS® or BCI® joists may be used.
- Intermediate or End Bearing Blocking: Install minimum 1" BC Rim Board® OSB or Versa-Lam® LVL as blocking.

Double Joist Detailing

- **Top Uniform Loaded Only Applications**
  - Detail allowed only when both plies are loaded evenly from the top.
  - Apply construction adhesive to contact surfaces to limit floor squeaks.
  - Nail floor sheathing to each joist.



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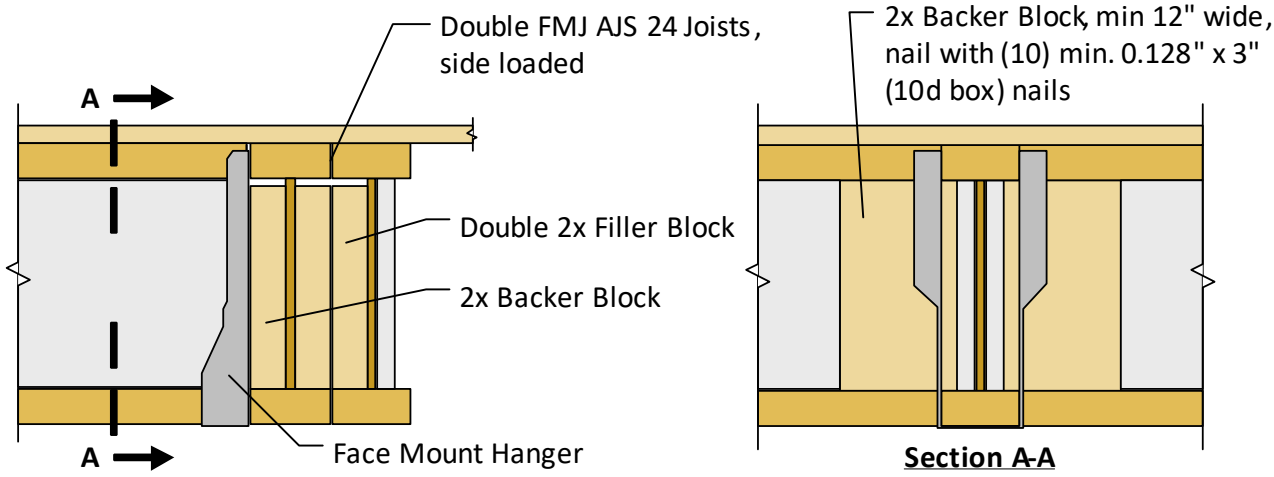
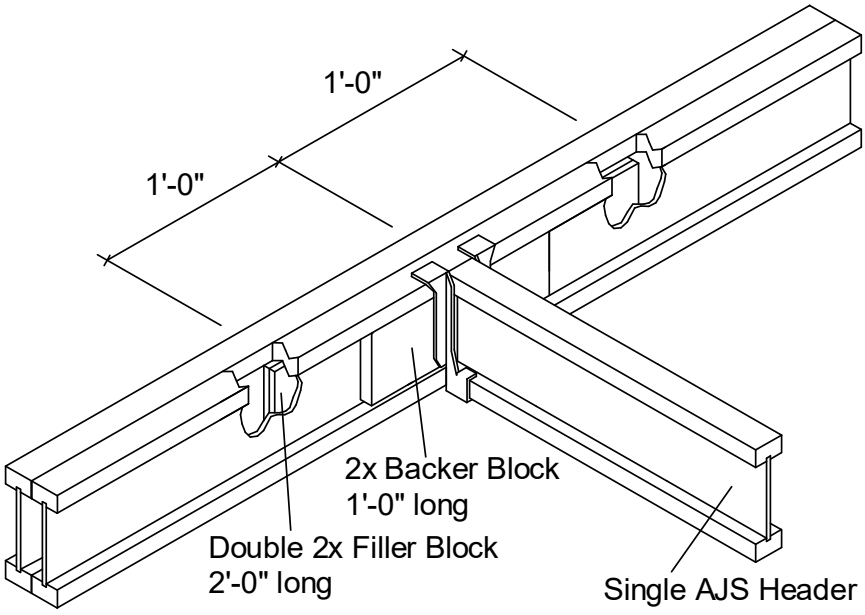
Side Loaded Applications



- Remove THERMAX™ in areas where filler and backer blocks are required (wear a dust mask and eye protection during removal); use utility and putty knives.
- Nail filler blocks with 2 rows min. 0.128" x 3" (10d box) nails at 12" on-center, stagger rows (offset of 6"), from both sides of double joist. Use pneumatic nail gun when nailing through THERMAX™.
- Continuous filler blocks required along length of double joist where multiple side loads exist. Single side point load requires minimum 2'-0" long filler block with min. 0.128" x 3" (10d box) nails.
- Top flange hangers are allowed if backer blocks are installed tight to underside of top flange.
- Refer to Technical Note IJ-13 *Multiply Ply BCI® / AJS® Members* for hanger capacity limits, connection values, and other multiple I-joist information.
- Apply construction adhesive to contact surfaces to limit floor squeaks.



Note: THERMAX web protectant not shown for clarity

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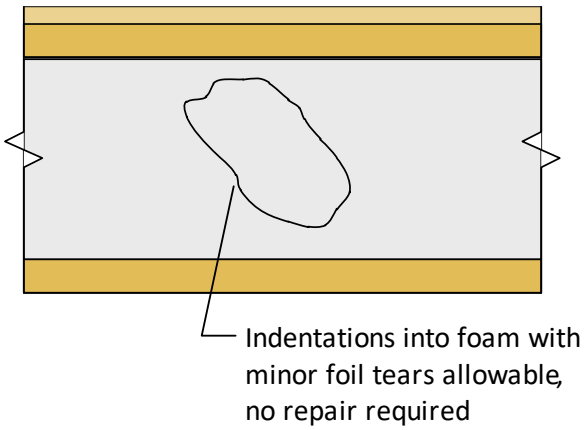
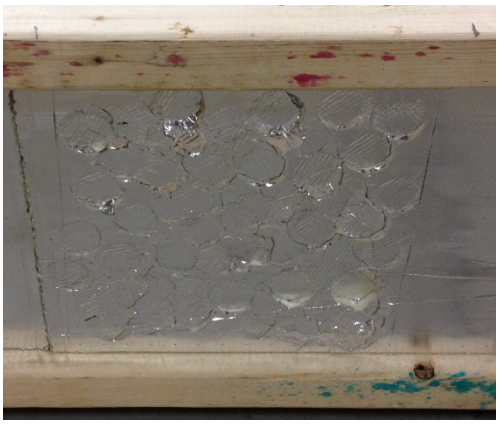
AJS® 24 FMJ Damage Guidelines

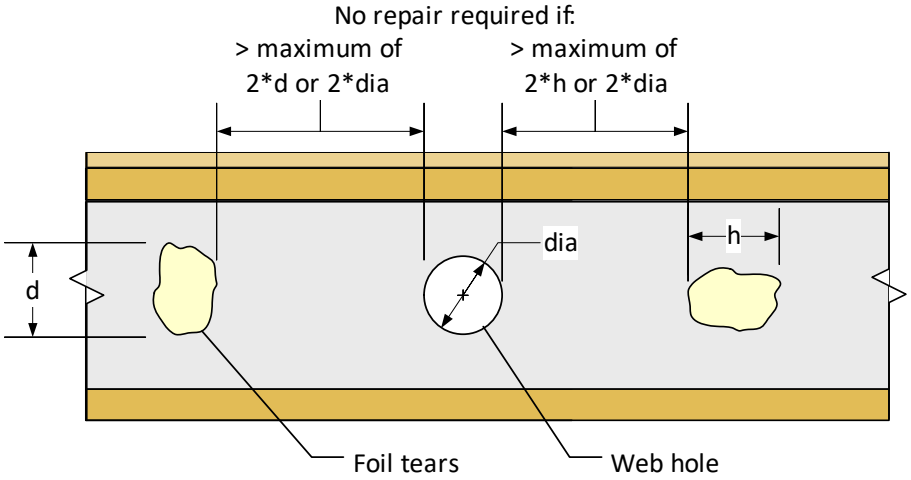
- No repair required for conditions where foil has been fractured and foam compressed.





- For conditions where foil and foam has been removed, use min. 3/8" depth of fire resistance caulk (ASTM E136 approved) in damaged area, full coverage.

- For conditions where foil has been removed for an area of 1.5 in^2 or less, no repair or consideration is required. Larger areas may be considered holes and are allowable if 1) the model hole is allowable per the hole table on page 8 or BC Calc® and 2) if not located within twice the greater dimension of itself and an adjacent hole or foil removed area. If located closer, foil tears may be repaired using the guidelines on page 2 and 3 for hole repairs.



- Discoloration may be present on THERMAX™ panels. Areas up to 24" wide and full depth of panel are allowable with no

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repair or consideration. For larger areas, previously listed repairs (aluminum foil tape, min. ½" gypsum board, min. 5/8" OSB or plywood) may be used to cover such areas or contact Boise Cascade EWP Engineering for specific condition review.

► The application of paints or stains is not allowed on the THERMAX™ panels of AJS® 24 FMJ Joists.

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