



SIP No. 2018

Subject: Fire Resistive Assemblies

Date: November 2007 (Revised May 2017)

ASTM E 119 (UL 263) tests have been conducted on R-Control SIPs to develop fire resistance assemblies.

Wall: Twenty Minute Rating

An R-Control SIP wall section faced with 1/2" gypsum board with an electrical outlet and wiring in place was tested. A foam sealant was placed around the outlet opening following R-Control SIP detail SIP-129a.

The results from ASTM E 119 testing showed that an R-Control SIP having electrical outlets, wiring and factory precut chases detailed per SIP-129a and with 1/2" gypsum board complies as a twenty minute fire rating per the ASTM E 119 test standard.

Wall: 1-Hour Rating

An R-Control SIP with two layers of 5/8" Type X gypsum board applied to the face, having an outlet and wiring in place and an intumescent caulk placed around the outlet opening complies as an hourly wall assembly per the criteria of ASTM E 119.

Please refer to PFS Corporation R-Control SIP Wall Assembly W1.

Wall: 1-Hour Rating

An R-Control SIP with one layer of 5/8" Type C gypsum board applied to the face and connected using 2X dimensional lumber splines complies as an hourly wall assembly per the criteria of ASTM E 119.

Please refer to PFS Corporation R-Control SIP Wall Assembly W2.

Roof/Ceiling: 1-Hour Rating

An R-Control SIP with two layers of 5/8" Type X gypsum board applied to the face complies as an hourly roof/ceiling assembly per the criteria of ASTM E 119.

Please refer to PFS Corporation R-Control SIP Roof/Ceiling Assembly R1.

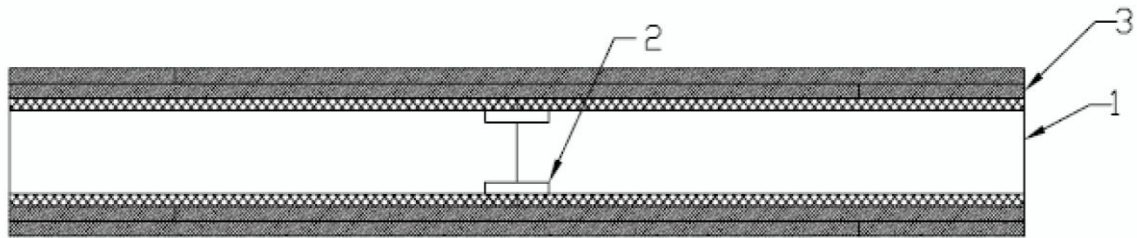
Roof/Ceiling: 1-Hour Rating

An R-Control SIP with sprayed fireproofing and supported by steel joists complies as an hourly roof/ceiling assembly per the criteria of ASTM E 119.

Please refer to PFS Corporation R-Control SIP Roof/Ceiling Assembly R2.



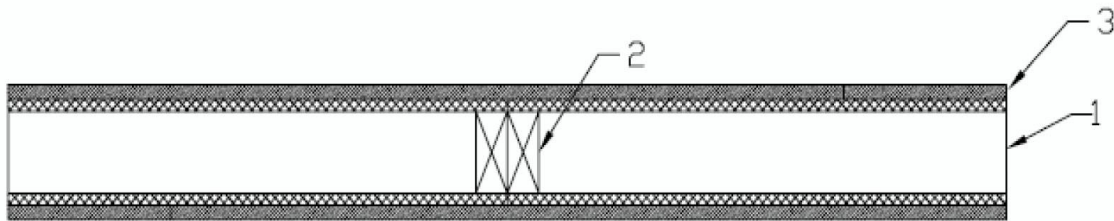
R-Control SIP Wall Assembly W1
1 Hour Fire Rated Assembly
(Formerly UL Assembly U534)



1. Panels – R-Control SIPs, 4-1/2 inch minimum thickness. R-Control SIPs loaded to 1800 lb. per linear foot.
2. OSB Splines - 7/16 in. thick oriented strand board splines, 3 inch minimum width, installed between vertical joints, in pre-cut channels in the Panels (Item 1). Splines secured to oriented strand board face of R-Control SIP with R-Control Do-All-Ply and 1-5/8 in. long Type S steel screws spaces 6 in. OC along the edges of each adjoining face. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
 - 2A. Block Spline (not shown) - 3 inch minimum width R-Control Block Spline, installed in Panels (Item 1) in pre-cut channels. R-Control Block spline secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. on center. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
 - 2B. Lumber Spline (not shown) - two nominal 2 in. by 6 in. SPF No. 2 or better lumber splines installed in Panels (Item 1) in pre-cut channels. Lumber splines secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed adjacent to spline in accordance with R-Control Construction Manual.
3. Gypsum Board - 5/8 in. thick, 4 ft. wide, Type X applied vertically in two layers. First layer installed with 1-5/8 in. long Type S steel screws spaced 24 in. OC vertically and 16 in. OC horizontally. First layer vertical joints offset min 16 in. from vertical spline joints of Panels (Item 1). Second layer installed with 2 in. long Type S steel screws spaced 12 in. OC vertically, offset 12 in. from first layer screws, and 16 in. OC horizontally, offset 8 in. from first layer screws. Second layer vertical joints offset min 16 in. from first layer vertical joints. Outer layer wallboard joints covered with joint tape and joint compound. Screw heads on outer layer of wallboard covered with joint compound.
4. Plates (Not Shown) - Nom 2 in. thick by width determined by panel thickness SPF No. 2 or better lumber installed at top and bottom of Panels (Item 1) in pre-cut channels. Plates secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.



R-Control SIP Wall Assembly W2
1 Hour Fire Rated Assembly
(Formerly UL Assembly U535)



1. Panels – R-Control SIPs, 6-1/2 inch minimum thickness. R-Control SIPs loaded to 1800 lb. per linear foot.
2. Lumber Splines - Two nominal 2 in. by 6 in. SPF No. 2 or better lumber splines installed in Panels (Item 1) in pre-cut channels. Lumber splines secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
3. Gypsum Board - 5/8 in. thick, 4 ft. wide, applied vertically installed with 1-5/8 in. long high/low bugle-head steel screws spaced 8 in. OC along the edges and 12 in. OC in the field. Vertical joints over vertical joints of Panels (Item 1). Gypsum Board joints covered with joint tape and joint compound. Screw heads covered with joint compound.

AMERICAN GYPSUM CO - Type AG-C

CANADIAN GYPSUM COMPANY - Type C

LAFARGE NORTH AMERICA INC - Types LGFC-C/A

TEMPLE-INLAND FOREST PRODUCTS CORP - Type TG-C

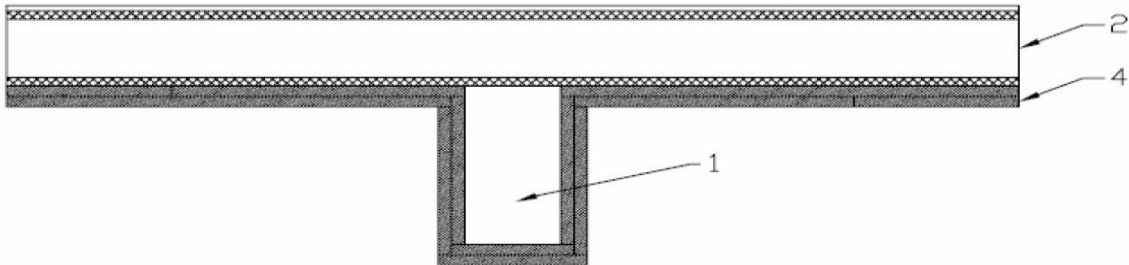
UNITED STATES GYPSUM CO - Type C

USG MEXICO S A DE C V - Type C

4. Plates (Not Shown) - Nom 2 in. thick by width determined by panel thickness SPF No. 2 or better lumber installed at top and bottom of Panels (Item 1) in pre-cut channels. Plates secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.



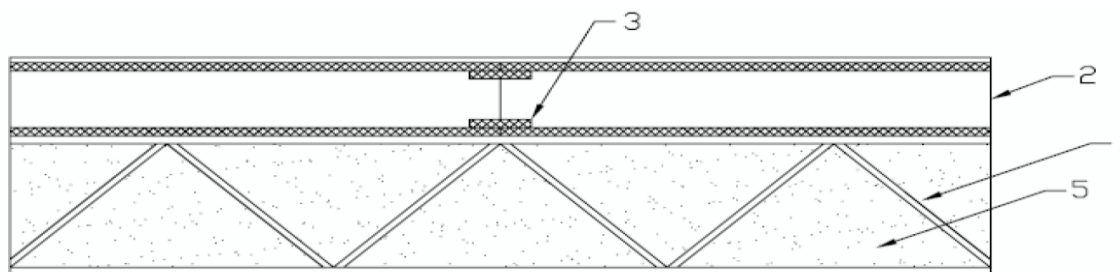
R-Control SIP Roof/Ceiling Assembly R1
1 Hour Fire Rated Assembly
(Formerly UL Assembly P517)



1. Wood Beam - Min 4-1/2 in. wide by 9-1/2 in. deep size wood beam spaced in accordance with manufacturer's specifications.
2. Panels - R-Control SIPs, 4-1/2 inch minimum thickness.
3. Lumber Splines (not shown) two nominal 2 in. by 6 in. SPF No. 2 or better lumber splines installed in Panels (Item 2) in pre-cut channels. Lumber splines secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
- 3A. OSB Splines (not shown) - 7/16 in. thick oriented strand board splines, 3 inch minimum width, installed between vertical joints, in pre-cut channels in the Panels (Item 2). Splines secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
- 3B. Block Spline (not shown), 3 inch minimum width R-Control Block Spline installed in Panels (Item 2) in pre-cut channels. R-Control Block Spline secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. on center. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
- 3C. I-Beam Spline (not shown), 2-1/2 inch minimum width flanged R-Control I-Beam Spline installed in Panels (Item 2) in pre-cut channels. R-Control I-Beam Spline secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. on center. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
4. Gypsum Board - minimum 5/8 in. thick, 4 ft. wide, Type X. For ceiling, two layers of 5/8 in. thick by 48 in. wide sheets installed with long dimension perpendicular to wood beams. Inner layer attached to Panels using 1-1/4 in. long Type S bugle-head steel screws spaced 8 in. OC along the joints and located 1/2 in. from the edges. Joints of inner layer of wallboard to be staggered from joints of panels. Outer layer attached to Panels using 2 in. long bugle-head steel screws spaced 8 in. OC and located 3/4 in. from the edge, and 12 in. OC in the field. Joints of outer layer to be staggered from joints of inner layer. For beam two layers of 5/8 in. gypsum wallboard fastened to wood beam using 1-1/4 in. long Type S bugle-head steel screws spaced 8 in. OC and outer layer fastened to wood beam using 2 in. long Type S bugle-head steel screws.
5. Joint System - (Not Shown) Outer wallboard joints covered with paper tape and joint compound. Screw heads covered with joint compound.



R-Control SIP Roof/Ceiling Assembly R2
1 Hour Fire Rated Assembly
(Formerly UL Assembly P822/839)



1. Steel Joist - Type 10K1 min size spaced in accordance with manufacturer's installation specifications.
2. Panels – R-Control SIPs, 4-1/2 inch minimum thickness.
3. Splines - 7/16 in. thick oriented strand board splines, 3 inch minimum width, installed in pre-cut channels in the Panels (Item 2). Splines secured to oriented strand board face of R-Control SIP with 0.113 minimum nails at maximum 6 in. OC. R-Control Do-All-Ply installed in accordance with R-Control Construction Manual.
4. Metal Lath (not shown) - Diamond mesh 3/8 in. expanded galvanized steel weighing 3.4 lbs per square yard. Secured to one side of joist using No. 20 SWG steel tie wire located at the mid-height of every other web member. Additional lath, installed to bottom surface of Panels and secured by means of 1 in. wide by 1-1/2 in. long staples spaced 7 in. OC.
5. Spray-Applied Fire Resistive Materials - Applied to wetted surfaces of steel joist bottom surface of building unit and metal lath which are free of dirt, oil or loose scale by spraying with water to achieve a minimum 2-1/4 in. thickness. Minimum average dry density of 13 pcf with minimum individual dry density of 11 pcf for Types DC/F and II. Minimum average density of 22 pcf with minimum individual dry density of 19 pcf for Type HP.

ISOLATEK INTERNATIONAL - Types DC/F, II or HP. Type EBS or Type X adhesive/sealer, optional.

- 5A. Spray-Applied Fire Resistive Materials - Applied to wetted surfaces of steel joist bottom surface of building unit and metal lath which are free of dirt, oil or loose scale by spraying with water to achieve a minimum 2-1/4 in. thickness. Minimum average dry density of 13 pcf with minimum individual dry density of 11 pcf for Type PBS2.

CAFCO FRANCE - Type PBS2



R-Control SIPs are made exclusively with Foam-Control EPS. R-Control SIPs and Foam-Control EPS are manufactured by AFM Corporation licensees.

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