QAI LABORATORIES
CERTIFICATION TESTING INSPECTION

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BUILDING PRODUCTS LISTING PROGRAM

Customer: Modus Structures Inc.
Class: Structural Insulating Panels
Location: Crossfield, Alberta
Website: www.modusinc.ca
Listing No. B1038
Project No. B1038-1 Edition 2
Effective Date: June 16, 2011
Last Revised Date: August 18, 2016
Expires: N/A

Standards:

ASTM E72	Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
ASTM E96	Standard Test Methods for Water Vapor Transmission of Materials.
ASTM E564	Standard Practice for Static Load Test for Shear Resistance of Framed Walls for Buildings.
ASTM E90	Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
ASTM E119	Standard Test Methods for Fire Tests of Building Construction and Materials.
ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials.
CAN/ULC-S101	Standard Methods of Fire Endurance Tests of Building Construction and Materials.

Product: Structural Insulating Panels in the following configurations:

- Floor Panel: FP95-16OC
- Wall Panel: WP6-WC
- Roof Panel: RP11875-16OC
- Roof Panel: RP14-12OC

Markings: Each structural insulating panel is marked with the following content, using a permanent adhesive label, in an area that is readily visible for inspection at the construction site:

a) Listee name or recognized trademark (Modus)
b) City and province of manufacture (Crossfield, Alberta)
c) QAI logo with ‘c’ and ‘us’ indicators
d) Date of manufacture
e) Product model
f) QAI file number (B1038-1)

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Models / Ratings:

	FP95-16OC	**WP6-WC**	**RP11875-16OC**	**RP14-12OC**
ASTM E72 Transverse Load	450 psf (4' x 13') 181 psf (4' x 21')	257 psf (4' x 8') load on interior 293 psf (4' x 8') Load on exterior 143 psf (4' x 10.5') Load on interior 150 psf (4' x 10.5') Load on exterior	288 psf (4' x 24')	421 psf (4' x 24')
ASTM E72 Axial Load	-	28,240 lbf (4' x 8') 26,376 lbf (4' x 10.5')	-	-
ASTM E96 Water Vapor Transmission	-	0.088 perms with joint adhesive 0.103 perms without joint adhesive	-	-
ASTM E564 Racking Shear Load	-	7164 lbf (4' x 8') 6140 lbf (4' x10.5')	-	-
ASTM E90 Sound Transmission Loss	-	STC = 19 OITC = 21	-	-
ASTM E119 Fire Tests	60-minute fire resistance rating load bearing 30psf. Design #: B1038-FP9516OC-60min-30psf	60-minute fire resistance rating Load bearing 1100 lbs / linear ft room side fire exposure. Design #: B1038-WP6WC-60min-1100lbs/ft	60-minute fire resistance rating load bearing 113psf Design #: B1038-RP1187516OC-60min-113psf	-
ASTM E84 Surface Burning Characteristic	Flame Spread = 5 Smoke Developed Index = 400			
CAN/ULC S101 Fire Endurance Tests	60-minute fire resistance rating load bearing 30psf. Design #: B1038-FP9516OC-60min-30psf	60-minute fire resistance rating Load bearing 1100 lbs / linear ft room side fire exposure. Design #: B1038-WP6WC-60min-1100lbs/ft	-	-

Note: "-" indicates the property was not tested for the product configuration

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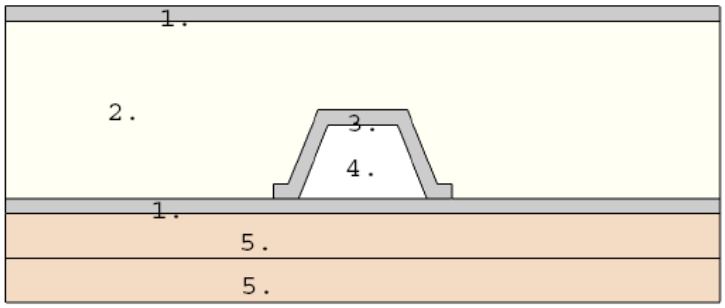
Design Number: B1038-WP6-WC (60min-1100lbs/ft)

Assembly Rating: 1 Hour Wall Assembly
Load Bearing at 1100 lbs per lineal foot
Room Side Fire Exposure



Interior Room Side

Load bearing wall assembly using Modus WP6-WC structurally insulated panels manufactured from:

1. 26 gauge steel skin
2. Expanded polystyrene (EPS), Type 1, 6 in. thick
3. 18 gauge steel hat channel
4. Air space

Assembly requirements:

5. Two layers of Type X gypsum wallboard applied to the fire side. One layer of 5/8 in. type X gypsum wallboard installed vertically with joints staggered 24 in. from panel joints. Second (outer) layer composed of 1/2 in. Type X gypsum wallboard installed vertically with panel joints staggered 12 in. from base layer gypsum joints. Each layer fastened with drywall screws located 16 in. on centre vertically and 16 in. on center horizontally. Wallboard joints taped and filled.

Connection of panels (not shown):

Panel joints are connected using eleven screws, located 12 in. on centers in each joint, on each side of the wall. Panel joints are caulked with 3M CP25 WB+ on each side of the wall as an air seal in the joint. The panel is oriented with the steel hat channel side towards the fire.

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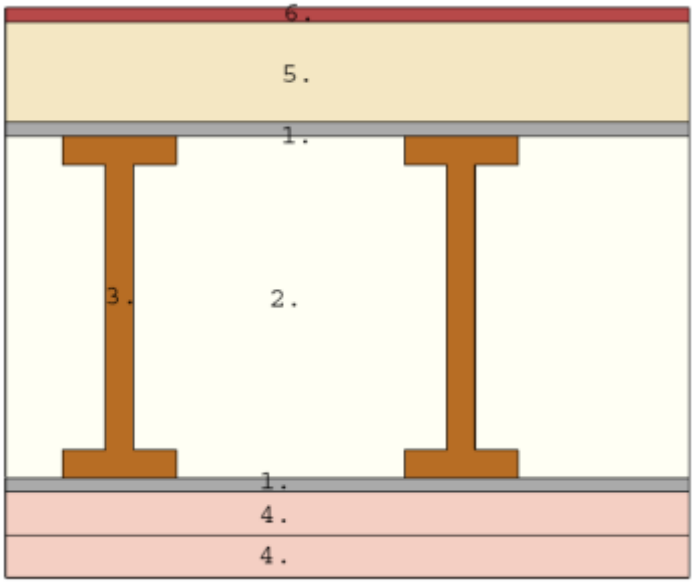
Design Number: B1038-RP11875-16OC (60min-113psf)

Assembly Rating: 1 Hour Ceiling Assembly
Load Bearing 113 psf



Fire Side

Load bearing ceiling assembly using Modus RP11875-16OC structurally insulated panels manufactured from:

1. 26 gauge steel skin
2. Expandable polystyrene (EPS), Type 1, 11-7/8 in. thick
3. Wood I-Joists, 11-7/8 in. height, spaced 16 in. on center

Assembly requirements:

4. Two layers of 1/2" Type C gypsum wallboard on the room side. The wallboard is oriented perpendicular to the wood I-joists, with seams staggered 12” between layers. Both layers of gypsum wallboard are mechanically fastened to the internal I-joists using 1-5/8” long coarse thread drywall screws spaced 8” on center at joints and 12” on center in the field. All exposed joints are covered with joint tape and 2 coats of joint compound; all exposed screw heads are covered with two layers of joint compound.
5. 2” thick expanded polystyrene foam layer is adhered to the Modus panel surface using a two part adhesive (Weather-Tite® One Step Foamable Adhesive, WTT Systems), with continuous beads 6” apart.
6. 1/4” sheets of Densdeck black and white exterior gypsum substrate adhered to the exposed expanded polystyrene surface using a 2 part adhesive (Weather-Tite® One Step Foamable Adhesive, WTT Systems), with continuous beads 6” apart.

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Connection of panels (not shown):

Panels are joined using tongue and groove connections with a continuous bead of air sealant applied to the female groove. 2” x 2” x 3/4" galvanized steel angle is fastened to the panel ends to provide a means for attaching rim board. The angle is fastened to the steel panel skin using #6 x 1/2” wafferhead TEK point screws, nominally 6” on center. Two layers of 3/4" thick rim board are fastened through the galvanized angle. The first layer was attached using #10 x 2” wood screws placed 12” on center. Two beads of PL400 panel adhesive are applied to the face of the rim board. The second layer of rim board is fastened to the first using #10 x 2” wood screws spaced 12” on center. The other edges of the assembly receive two layers of rim board, installed identically as the other ends except the base layer is attached to the top and bottom chord of the embedded joists using #10 x 3” wood screws.

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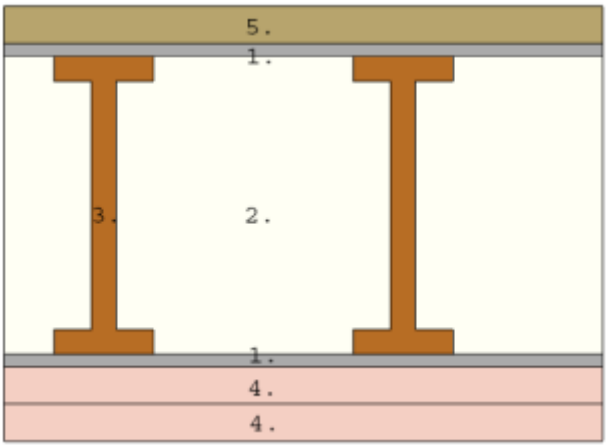
Design Number: B1038-FP95-16OC (60min-30psf)

Assembly Rating: 1 Hour Floor Assembly
Load Bearing 30 psf
Fire resistance rating applies to room interior side only



Fire Side

Load bearing floor assembly using Modus FP95-16OC structurally insulated panels manufactured from:

1. 26 gauge steel skin
2. Expanded polystyrene (EPS), Type 1, 9-1/2 in. thick
3. Wood I-Joists, 9-1/2 in. height, spaced 16 in. on center

Assembly requirements:

4. Two layers of 1/2” Type C gypsum wallboard on the room side. The wallboard is oriented perpendicular to the wood I-joists, with staggered seams between layers. The base layer of gypsum wallboard is mechanically fastened to the internal I-joists using 1-1/4” long coarse thread drywall screws spaced 16” o.c. The face layer is fastened to the internal I-joists using 2” long coarse thread drywall screws spaced 16” o.c., staggered 8” from the base layer. The face layer of gypsum wallboard requires a level 2 drywall finish.
5. 5/8” thick tongue and groove plywood (48” x 96”) fastened to the internal I-joists using 2-3/8” long ring shank nails spaced 6” on center. PL400 construction adhesive is used at the joist locations. An EDPM membrane is adhered over the deck using Sarnacol roofing adhesive 2170R (CA).

Connection of panels (not shown):

Panels are joined using tongue and groove connections with a continuous bead of air sealant applied to the female groove. 2” x 2” x 3/4" galvanized steel angle is fastened to the panel ends to provide a means for attaching rim board. The angle is fastened to the steel panel skin using #6 x 1/2” wafferhead TEK point screws, nominally 8” on center. Two layers of 3/4" thick rim board are fastened through the galvanized angle. The first layer was attached using #10 x 2” wood screws placed 12” on center. Two beads of PL400 panel adhesive are applied to the face of the rim board. The second layer of rim board is fastened to the first using #10 x 2” wood screws spaced 12” on center. The other edges of the assembly receive two layers of rim board, installed identically as the other ends except the base layer is attached to the top and bottom chord of the embedded joists using #10 x 3” wood screws.

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Notes: Refer to QAI evaluation report B1038-1 and the applicable test reports for test assembly configurations used for fire endurance testing.

Final acceptance of the product in the intended application is to be determined by the authority having jurisdiction (AHJ).

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