

ICC-ES Evaluation Report**ESR-2686**

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**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION****Section: 07 41 13—Metal Roof Panels****REPORT HOLDER:****CHAMPION ENCLOSURE SUPPLIERS**
12111 CHAMPION WAY
CINCINNATI, OHIO 45241
www.championwindow.com**EVALUATION SUBJECT:****CHAMPION SUPERFOAM PATIO-COVER ROOF PANEL
SYSTEM****1.0 EVALUATION SCOPE****Compliance with the following codes:**2009 and 2006 *International Residential Code*® (IRC)**Properties evaluated:**

Structural

2.0 USES

The Champion Superfoam patio-cover roof panel system is used as a structural roof panel system for patio covers complying with 2009 and 2006 IRC Appendix H.

3.0 DESCRIPTION**3.1 General:**

The Champion Superfoam patio-cover roof panel system consists of factory-assembled sandwich panels and mullions. The sandwich panels consist of aluminum facings adhered to an expanded polystyrene foam plastic core. The panels are 36 inches (914 mm) wide and 3³/₄ inches (95 mm) or 6 inches (152 mm) thick. The panels are field-installed, with the mullions along the longitudinal joints of the panels.

3.2 Materials:

3.2.1 Panel Core: The core material consists of expanded polystyrene foam plastic that complies with ASTM C 578 as Type II, and is described in the approved quality control manual. The foam plastic has a 1.5 pcf (24 kg/m³) nominal density, and has a flame-spread rating of 25 or less and a smoke-density rating of 450 or less when tested in accordance with ASTM E 84.

3.2.2 Panel Facings: The facing material on both sides of the panels has a nominal base-metal thickness of 0.024 inch (0.61 mm), is a 3105-H274 aluminum alloy, and has

minimum yield and tensile strengths of 18 ksi (124 MPa) and 22 ksi (152 MPa), respectively.

3.2.3 Panel Adhesive: The facings are factory-adhered to the core using the proprietary adhesive classified as a Type II, Class 2, adhesive described in the approved quality control manual.

3.2.4 Mullions: The mullions used to interconnect the panels along their longitudinal edges are of extruded 6063-T6 aluminum alloy complying with ASTM B 221. See Figure 1 for mullion specifications.

4.0 DESIGN AND INSTALLATION**4.1 Design:**

For use in allowable stress design, allowable uniform gravity loads, for live and roof snow loads for the panels used as roof panels, are shown in Table 1; and the allowable upward wind loads for the panels used as roof panels are shown in Table 2. The loads tabulated in Table 1 are the allowable total transverse loads for the roof panels, which must be greater than the applied loads determined in accordance with the code. Use of the panels to resist axial loads due to horizontal wind, or to resist in-plane shear loads when the panels are used as a roof diaphragm, is outside the scope of this report.

4.2 Installation:

The roof panel and mullion length must be continuous in the direction of its slope, with no transverse joints. The roof panel longitudinal seam must be located a minimum of 24 inches (610 mm) from the inside face of the wall parallel to the panel length. Longitudinal panel edges are connected to adjacent panel edges using the mullions described in Section 3.2.4. Each end of each mullion flange is secured, at 24 inches on center, to the panels with stainless steel, No. 8, self-drilling or self-piercing tapping screws, having minimum 1/4-inch-diameter (6.4 mm) pan, round, truss, hex or hex-washer heads. Panel supports must provide a minimum 1-inch-wide (25 mm) continuous bearing width at support points for gravity loads. For wind uplift loads, panel restraints at each panel end must provide a minimum 1-inch-wide (25.4 mm) continuous bearing width, or the panel mullions must be secured to supports with stainless steel, No. 8 by 1/2-inch (12.7 mm), self-drilling or self-piercing tapping screws having minimum 1/4-inch-diameter (6.4 mm) heads. (Justification for the actual fastener head diameter must be substantiated to the satisfaction of the code official.) See Figure 2 for installation details, and Table 2 for fastening schedule. Connection of the panels to the structure must be substantiated to the satisfaction of the code official.

5.0 CONDITIONS OF USE

The Champion Enclosure Suppliers, Inc., Superfoam patio-cover roof panel system described in this report complies with, or is a suitable alternative to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 System fabrication, identification and installation must comply with this report and the manufacturer's published installation instructions. In the event of conflicts between this report and the manufacturer's published instructions, this report governs.
- 5.2 The system is limited to use as roof panels of patio covers regulated under 2009 and 2006 IRC Appendix H.
- 5.3 System connections to the supporting structure must be designed in accordance with the applicable code.
- 5.4 The remaining portions of the structure must be designed and constructed in accordance with the applicable code.
- 5.5 The roof panels are limited to installations where a nonclassified roof covering is permitted.
- 5.6 Calculations and drawings demonstrating compliance with this report must be submitted to the code official for approval. The calculations and drawings must be

prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

- 5.7 The panels are fabricated by Champion Enclosure Suppliers, Inc., in Cincinnati, Ohio, with inspections by CI Professional Services, Inc. (AA-656).

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Sandwich Panels (AC04), dated October 2011.
- 6.2 Reports of room corner fire testing in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated February, 2011.

7.0 IDENTIFICATION

Each roof panel is identified by a label noting the name and address of Champion Enclosure Suppliers, the panel type, the evaluation report number (ESR-2686), and the name of the inspection agency (CI Professional Services, Inc.). Each package of mullions is identified by a label bearing the name and address of Champion Enclosure Suppliers, the evaluation report number (ESR-2686), and the name of the inspection agency (CI Professional Services, Inc.).

TABLE 1—ALLOWABLE PANEL SPANS (feet-inches) FOR GRAVITY LOADING (LIVE AND ROOF SNOW LOADS) ^{1,2,3,4,5,6}

CORE THICKNESS (inches)	LIVE LOAD (psf)		ROOF SNOW LOAD (psf)										
	10	20	20	25	30	35	40	45	50	60	70	80	90
3 ³ / ₄	21-0	17-4	16-8	15-5	14-5	13-7	12-10	12-2	11-6	10-7	9-10	9-2	8-2
6	23-0	23-0	21-3	19-2	17-7	16-4	15-4	14-6	13-9	12-8	11-8	11-0	10-4

For SI: 1 inch = 25.4 mm, 1 ft = 304.8 mm, 1 pcf = 16.018 kg/m³, 1 psf = 47.9 Pa.

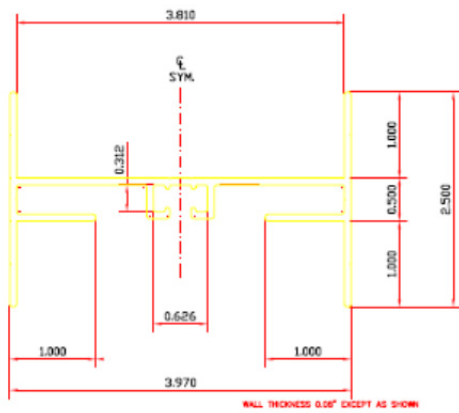
- ¹The roof panels must only be installed on structures permitted under 2009 and 2006 IRC Appendix H.
- ²The roof panels have aluminum alloy facings that are 0.024 inch thick, and a foam plastic core that has a nominal density of 1.5 pcf.
- ³Roof spans are based on simple span conditions and uniform load application. Consideration must be given to nonuniform loading, such as that associated with snow buildup.
- ⁴Allowable spans are based on L/120 gravity load deflection limitations.
- ⁵Minimum panel slope (per foot of projection) is 1/2 inch.
- ⁶Live load spans are based on a safety factor of 2.0; roof snow load spans are based on a safety factor of 2.5.

TABLE 2—ALLOWABLE PANEL SPANS (feet-inches) AND FASTENER SCHEDULES FOR UPLIFT LOADING ^{1,2,3,4,5}

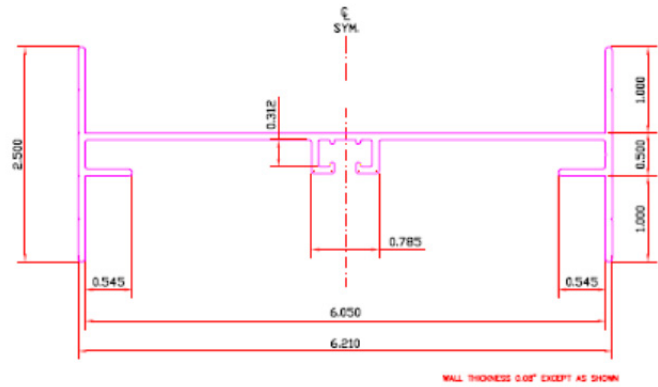
CORE THICKNESS (inches)	VARIABLE	UPLIFT LOAD (psf)										
		10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35
3 ³ / ₄	Allowable span	21-0	21-0	20-4	19-2	18-2	17-4	16-7	16-0	15-5	15-0	14-6
	Number of screws per connection	3	3	3	3	3	3	4	4	4	4	5
6	Allowable span	23-0	23-0	23-0	23-0	23-0	23-0	22-9	21-8	20-8	19-10	19-1
	Number of screws per connection	3	3	3	4	4	4	4	5	5	5	5

For SI: 1 inch = 25.4 mm, 1 ft = 304.8 mm, 1 pcf = 16.018 kg/m³, 1 psf = 47.9 Pa.

- ¹The roof panels must only be installed on structures permitted under 2009 and 2006 IRC Appendix H.
- ²Roof spans are based on simple span conditions and uniform load application. Consideration must be given to nonuniform loading, such as that associated with areas of discontinuity for wind loads.
- ³To resist wind uplift forces, No. 8 fasteners must be installed as specified in the table. The maximum panel overhang at supports is 24 inches.
- ⁴"Number of screws per connection" indicates the number of screws at each of the following locations (see Figure 2):
 - Outside horizontal edge of header to roof mullion.
 - Inside horizontal edge of header to roof mullion.
 Note: Fastening of vertical leg of rotating cap to wall header must be designed.
- ⁵Allowable spans are based on L/120 wind uplift load deflection limitations.



3.75-inch Mullion



6-inch Mullion

FIGURE 1—MULLION DETAILS

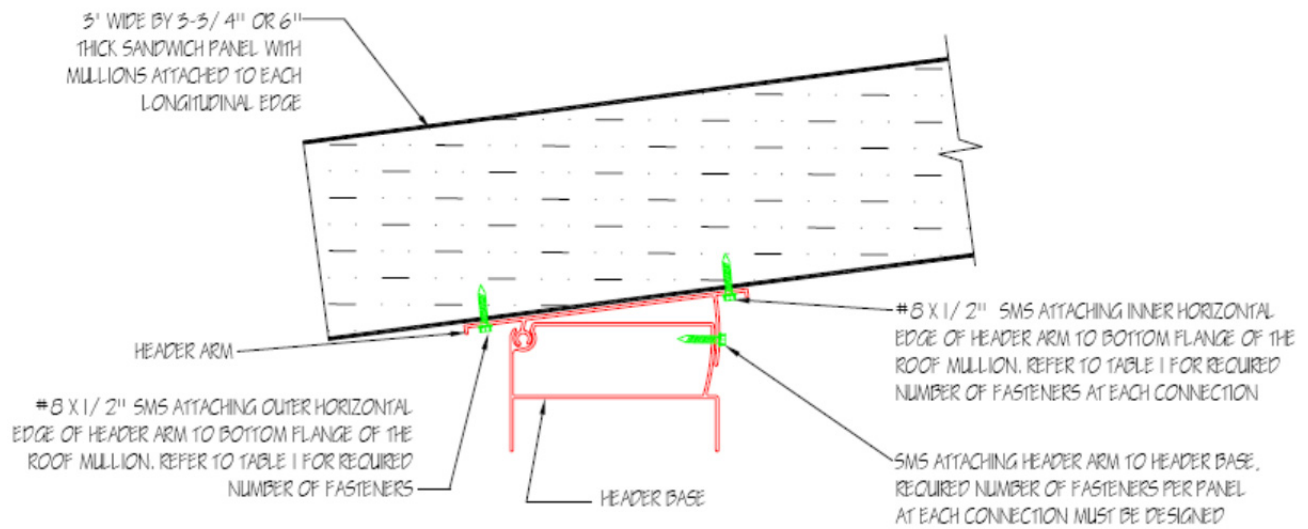


FIGURE 2—HEADER TO ROOF SYSTEM CONNECTION DETAIL