

ICC-ES Evaluation Report

ESR-1470


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<p>DIVISION: 07 00 00— THERMAL AND MOISTURE PROTECTION</p> <p>Section: 07 40 00— Roofing and Siding Panels</p>	<p>REPORT HOLDER:</p> <p>GREAT DAY IMPROVEMENTS, LLC</p>	<p>EVALUATION SUBJECT:</p> <p>SUPER-FOAM ROOF SYSTEM</p>	
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1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2024, 2021, 2018, 2015, 2012, 2009 and 2006 [International Residential Code® \(IRC\)](#)

Properties evaluated

- Structural

1.2 Evaluation to the following green code(s) and/or standards:

- 2022 [California Green Building Standards Code \(CALGreen\)](#), Title 24, Part 11
- 2020, 2015, 2012 and 2008 ICC 700 [National Green Building Standard™](#) (ICC 700-2020, ICC 700-2015, ICC 700-2012 and ICC 700-2008)

Attributes verified:

- See Section 3.1

2.0 USES

The Great Day Improvements, LLC, Super-Foam Roof System, described in this report, is used to construct roofs for patio covers complying with Appendix BF of the 2024 IRC, Appendix AH of the 2021 IRC (Appendix H of the 2018, 2015, 2012, 2009 and 2006 IRC).

3.0 DESCRIPTION

3.1 General:

The Great Day Improvements, LLC, Super-Foam roof system consists of roof panels, which are interconnected by aluminum splines field-installed in the longitudinal joints of the panels. Each roof panel is a factory-assembled sandwich panel consisting of aluminum facings adhered to an expanded polystyrene foam plastic core. The panels are 36 inches (914 mm) wide and have nominal thicknesses of 3, 3³/₄, 4⁵/₈ and 6 inches (76, 117 and 152 mm), with longitudinal square-cut edges.

The attributes of the roof system have been verified as conforming to the provisions of (i) CALGreen Section A4.404.3.3 and (ii) ICC 700-2020, ICC 700-2015, ICC 700-2012 and ICC 700-2008 Section 601.5 and 11.601.5 for prefabricated components. Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.2 Materials:

3.2.1 Panel Core: The core material is 1.5 pcf (24 kg /m³) nominal density, Type II, expanded polystyrene (EPS) foam plastic board complying with ASTM C578. The board is specified in the ICC-ES approved Great Day Improvements, LLC quality control documentation. The foam plastic has a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84.

3.2.2 Panel Facings: The facing material on both sides of the panel is 0.024-inch-thick (0.61 mm) aluminum with an alloy designation of 3105-H274, conforming to the requirements for 3105-H16 as designated in ASTM B209, with a minimum tensile strength of 25 ksi (170 MPa) and a minimum yield strength of 21 ksi (145 MPa).

3.2.3 Panel Adhesive: The facings are factory-adhered to the core with an adhesive, described in the approved Great Day Improvements, LLC, quality control documentation, that is a Type II, Class 2, adhesive complying with the ICC-ES Acceptance Criteria for Sandwich Panel Adhesives (AC05).

3.2.4 Splines: The splines used to interconnect the panels along their longitudinal edges are of extruded 6063-T6 aluminum alloy complying with ASTM B221. See [Figure 1](#) for specifications.

3.2.5 Fasteners: The fasteners used to attach the splines to the longitudinal edges of the roof panels must be minimum 1/2-inch-long (12.7 mm), No. 8 hex-head, self-tapping, self-drilling, stainless steel sheet metal screws complying with ASTM C1513. The screws must have a minimum nominal shear strength (P_{ss}) of 1000 pounds (4448 N), and a minimum nominal tensile strength (P_{ts}) of 1575 pounds (7006 N). The screws must connect the top flange of the I-beam splines to the top aluminum facing at each side of the longitudinal joint of adjacent roof panels. Refer to Section 4.2 for screw spacing and distance to panel supports.

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 upload 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 roof panel system to resist any other loading conditions, such as axial compression or tension forces on the panels due to horizontal wind loads, or use of the system as a roof diaphragm to resist lateral forces such as seismic or horizontal wind loads, is outside the scope of this report.

4.2 Installation:

The panels must be installed as the roof of a patio cover with the panel length perpendicular to the supporting members and continuous in the direction of the roof slope, without transverse joints. The roof panel longitudinal seam must be located a minimum of 24 inches (608 mm) from the inside face of the wall, parallel to the panel length. To prevent ponding, the panels must be installed at the minimum roof slope noted in [Table 1](#). Supports of the panel and longitudinal spline assembly must provide a minimum 1-inch-wide (25.4 mm) continuous bearing width at support locations, for gravity loads and upward and downward wind loads. As an alternative for wind uplift loads, the panels can be supported by connecting the splines or the panels to the supporting structure with connections designed and detailed to the satisfaction of the code official. Connections of the longitudinal splines to the supporting structure must be substantiated to the satisfaction of the code official.

The longitudinal edges of adjacent panels must be interconnected to the top flange of the splines, with fasteners described in Section 3.2.5 of this report, and located at a maximum spacing of 24 inches (610 mm) and a maximum end distance of 6 inches (152 mm) from the panel supports.

All roof panel edges are encapsulated with a nonstructural aluminum fascia.

5.0 CONDITIONS OF USE:

The Super-Foam roof system described in this report complies with, or is a suitable alternative to what is specified in, the code indicated in Section 1.0 of this report, subject to the following conditions:

- 5.1** The system shall be limited to use as roof panels of patio covers regulated by Appendix BF of the 2024 IRC, Appendix AH of the 2021 IRC (Appendix H of the 2018, 2015, 2012, 2009 and 2006 IRC).
- 5.2** Panel fabrication, identification and installation must comply with this report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published instructions, this report governs.

- 5.3 Panel connections to the supporting structure shall be designed to resist the applicable loads in accordance with the applicable code.
- 5.4 The remaining portions of the structure are outside the scope of this report and shall be designed and constructed in accordance with the applicable code.
- 5.5 Calculations and drawings demonstrating compliance with this report shall be submitted to the code official. 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.
- 5.6 Recognition under the IRC is limited to installations permitting a non-classified roof covering under IRC Section R902.1, unless evidence of testing in accordance with ASTM E108 or UL790 is provided.
- 5.7 The panels are fabricated at the Great Day Improvements, LLC, facility under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the [ICC-ES Acceptance Criteria for Sandwich Panels \(AC04\)](#), dated February 2012 (editorially revised August 2024).
- 6.2 Data in accordance with the [ICC-ES Acceptance Criteria for Foam Plastic Insulation \(AC12\)](#), dated June 2015 (editorially revised June 2024), including reports of room fire tests.

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-1470) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.
- 7.2 Each roof panel, and the packaging of the aluminum spline members, is identified by a label bearing the name and address of Great Day Improvements, LLC, the system name (Super-Foam Roof Panel System) and the statement "For Use in One- and Two-Family Dwellings Only".
- 7.3 The report holder's contact information is the following:

GREAT DAY IMPROVEMENTS, LLC
700 EAST HIGHLAND ROAD
MACEDONIA, OHIO 44056
(330) 468-0700
www.greatdayimprovements.com

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

Core Thickness (inches)	Live Load (psf)		Snow Load (psf)										
	10	20	20	25	30	35	40	45	50	60	70	80	90
3	17-5	14-10	14-2	13-2	12-4	11-8	11-2	10-7	10-1	9-3	8-7	8-0	7-7
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
4 ⁵ / ₈	19-0	19-0	17-4	15-7	14-3	13-4	12-6	11-9	11-2	10-3	9-6	8-11	8-5
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 Appendix BF of the 2024 IRC, Appendix AH of the 2021 IRC and Appendix H of the 2018, 2015, 2012, 2009 and 2006 IRC.

²Roof 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.

³Allowable spans are based on L/120 gravity load deflection limitations.

⁴Minimum panel slope (per foot of projection) is 1/2 inch.

⁵Live 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) FOR UPLIFT LOADING^{1,2,3,4}

Core Thickness (inches)	UPLIFT PRESSURE (psf)												
	10	12.5	15	17.5	20	22.5	25	27.5	30	32.5	35	37.5	40
3	19-0	18-7	17-3	16-3	15-6	14-9	14-2	13-8	13-3	12-10	12-5	12-1	11-9
3 ³ / ₄	21-0	21-0	20-4	19-2	18-2	17-4	16-7	16-0	15-5	15-5	14-6	14-1	13-8
4 ⁵ / ₈	19-0	19-0	19-0	19-0	19-0	19-0	19-0	18-6	17-8	16-11	16-4	15-8	14-7
6	23-0	23-0	23-0	23-0	23-0	23-0	22-9	21-8	20-8	19-10	19-1	18-5	17-10

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 Appendix BF of the 2024 IRC, Appendix AH of the 2021 IRC and Appendix H of the 2018, 2015, 2012, 2009 and 2006 IRC.

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.

³The maximum panel overhang at supports is 24 inches.

⁴Allowable spans are based on L/120 gravity load deflection limitations.

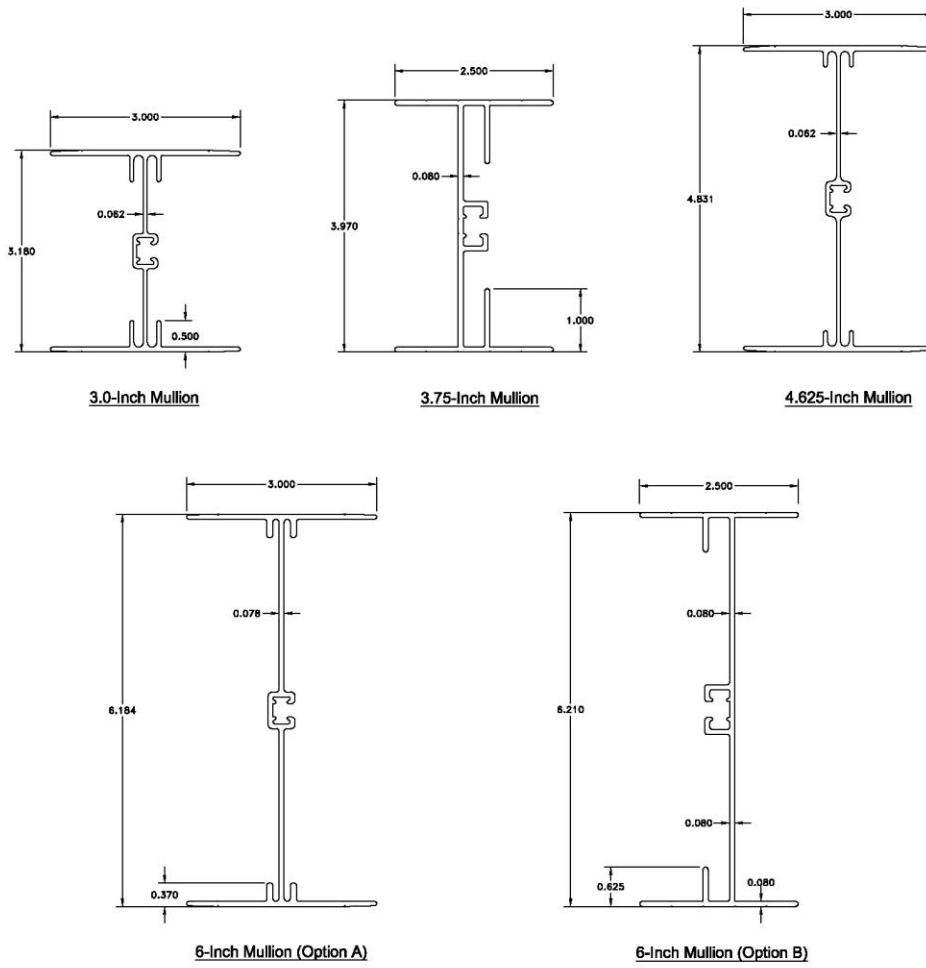


FIGURE 1 – SPLINE DETAILS