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ESR-3177

Reissued 05/2017
This report is subject to renewal 05/2018.

DIVISION: 08 00 00—OPENINGS
SECTION: 08 62 00—UNIT SKYLIGHTS

REPORT HOLDER:

KINGSPAN LIGHT + AIR LLC

401 EAST GOETZ AVENUE
SANTA ANA, CALIFORNIA 92707

EVALUATION SUBJECT:

BRISTOL ACRYLIC ALUMINUM CURB MOUNT (AL-CM) AND BRISTOL ACRYLIC ALUMINUM SELF FLASHED (AL-SF) SKYLIGHTS

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ICC-ES Evaluation Report

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DIVISION: 08 00 00—OPENINGS
Section: 08 62 00—Unit Skylights

REPORT HOLDER:

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BRISTOL ACRYLIC ALUMINUM CURB MOUNT (AL-CM) AND BRISTOL ACRYLIC ALUMINUM SELF FLASHED (AL-SF) SKYLIGHTS

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2009 and 2006 *International Building Code*® (IBC)
- 2009 and 2006 *International Residential Code*® (IRC)

Properties evaluated:

- Structural
- Air infiltration
- Water penetration resistance
- Durability

1.2 Evaluation to the following green standard:

- 2015 and 2012 ICC 700 *National Green Building Standard*™ (ICC 700-2015 and ICC 700-2012)

Attributes verified:

- See Section 3.0

2.0 USES

The Bristol Acrylic Aluminum Curb Mount (AL-CM) and the Bristol Acrylic Aluminum Self Flashed (AL-SF) are non-operable plastic-glazed unit skylights complying with Sections 2405 and 2610 of the IBC and Section R308.6 of the IRC.

3.0 DESCRIPTION

The AL-CM series consists of smooth round plastic domes, aluminum retainer caps, and aluminum curb frames. The aluminum curb frames are attached to a wood curb. The AL-SF series of skylights consist of smooth round plastic domes, aluminum retainer caps, and aluminum self-flashing frames. The aluminum self-flashing frame serves as the curb and is attached to the supporting structure. The overall height of the aluminum self-flashing frame is 4 inches (102 mm).

The plastic domes are formed from the Optix® Acrylic Sheet plastic sheets recognized in ESR-2591. The plastic sheets used to form the domes are 0.098-, 0.150-, and 0.236-inch-thick (2.49, 3.81, and 5.99 mm) and have a CC2 classification. The aluminum components are manufactured from 6063 T5. Details for the skylights are provided in Tables 1 and 2 and Figures 1, 2, and 3.

The attributes of the skylights have been verified as conforming to the requirements of (i) ICC 700-2015 Section 701.4.3.3 and 11.701.4.3.4 and ICC 700-2012 Section 701.4.3.3 and 11.701.4.3.3 for fenestration air leakage. 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.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 Performance Grade: The performance grade (PG) ratings are provided in Tables 1 and 2.

4.1.2 Air Infiltration: When tested at an air pressure differential of 1.57 psf (75 Pa), the skylights have an air leakage rate of less than 0.30 cfm/ft^2 (1.5 L/s*m^2).

4.2 Installation:

The skylight must be attached with No. 8 corrosion-resistant wood screws in each mounting hole provided in the skylight frame, with the screw length being sufficient to penetrate the wood curb or roof framing member a minimum of $1^1/_2$ inches (38 mm). See Table 2 for the required number of fasteners. Additional installation details are provided in Table 2 and Figures 1 through 3.

4.2.1 AL-CM Series: The curb-mounted skylights must be installed on framing of minimum 2-by-6 lumber with a minimum 0.50 specific gravity, sized to the inside dimension noted in Table 1, and of a height sufficient so that the plastic glazing is a minimum of 4 inches (102 mm) above the plane of the roof.

The curbs and/or the roof deck must have a square and level mounting surface. A $^1/_2$-inch-diameter (12.7 mm) bead of butyl sealant, silicone sealant, or an equivalent must be applied to the top surface of the curb or deck before the skylight is set in place.

Curb-mounted skylights must have the gap between the skylight frame and the wood curb fully shimmed. Flashing must comply with, and be installed in accordance with, IBC Section 1507 or IRC Section R905, as applicable.

4.2.2 AL-SF Series: An aluminum self-flashing frame that serves as a curb is provided with AL-SF series skylights. The overall height of the frame/curb is 4 inches (102 mm). However, during installation, a height sufficient so that the plastic glazing is a minimum of 4 inches (102 mm) above the plane of the roof must be maintained. Otherwise, installation is limited to a minimum slope of 3:12 in Occupancy Category R-3 per IBC Section 2405.4. The inside dimensions of the aluminum frames are provided in Table 1.

A sealant must be applied over the mounting flange of self-flashing skylight units and must be covered with the roof covering in such a manner as to ensure a watertight seal.

5.0 CONDITIONS OF USE

The AL-CM and AL-SF Skylights described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 The skylights must be installed in accordance with this report, Sections 2405.4 and 2610 of the IBC or Section R308.6 of the IRC, as applicable, and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.2 The manufacturer's installation instructions must be available at the jobsite during installation.

5.3 The use of the skylights as components of fire-resistance-rated assemblies is outside the scope of this report.

5.4 The attachment of the curbs to the supporting structure is outside the scope of this report.

5.5 The skylights are manufactured in Santa Ana, California, under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Plastic Glazed Skylights (AC16), dated April 2011 (editorially revised August 2013).

7.0 IDENTIFICATION

The skylights are labeled with the Kingspan Light + Air name and address; the AL-CM or AL-SF series; the product model number and performance grade ratings; the evaluation report number (ESR-3177); and a safety label complying with Class I, ANSI Z 35.1-1972 (warning of risk of falling).

TABLE 1—DIMENSIONAL DETAILS AND PERFORMANCE GRADES FOR BRISTOL SKYLIGHTS

MODEL NO.	INSIDE CURB DIMENSIONS (inches)	DOME THICKNESS (inch)	DOME RISE (inches)	PERFORMANCE GRADE (PG) (psf), AL-CM SERIES		PERFORMANCE GRADE (PG)(psf), AL-SF SERIES	
				PG_{pos} (inward forces)	PG_{neg} (outward forces)	PG_{pos} (inward forces)	PG_{neg} (outward forces)
1422	14.25 x 22.25	0.098	4	30	80	30	80
1414	14.25 x 14.25	0.098	4	30	80	30	80
2246	22.25 x 46.25	0.098	5	15	40	15	30
2237	22.25 x 37	0.098	5	15	40	15	30
2230	22.25 x 30.25	0.098	5	15	40	15	30
3046	30.25 x 46.25	0.098	6	15	60	15	55
3037	30.25 x 37	0.098	6	15	60	15	55
4242	42 x 42	0.098	8	15	40	15	40
3737	37 x 37	0.098	6	15	40	15	40
3030	30.25 x 30.25	0.098	6	15	40	15	40
2222	22.25 x 22.25	0.098	5	15	40	15	40
1919	19 x 19	0.098	5	15	40	15	40
4896	48 x 96	0.150	12	15	15	15	20
4848	48 x 48	0.150	11	15	15	15	20
4689	46.25 x 89.50	0.150	11	15	15	15	20
4669	46.25 x 69.50	0.150	11	15	15	15	20
4646	46.25 x 46.25	0.150	10	15	15	15	20
3859	38 x 59	0.150	9	15	15	15	20
3775	37 x 75	0.150	9	15	15	15	20
3746	37 x 46.25	0.150	9	15	15	15	20
3069	30.25 x 69.50	0.150	7	15	15	15	20
6096[1]	60 x 96	0.236	15	15	15	15	20
6072	60 x 72	0.236	15	15	15	15	20
5555	55 x 55	0.236	12	15	15	15	20
5460	54 x 60	0.236	13	15	15	15	20

For **SI:** 1 inch = 25.4 mm, 1 psf = 0.0479 kN/m^2.

[1] Model No. 6096 is considered a large size skylight which must be installed in accordance with Figure 2.

TABLE 2—REQUIRED FASTENERS FOR BRISTOL SKYLIGHTS

MODEL NO.	AL-CM SERIES		AL-SF SERIES	
	Number of Retainer Fasteners[1]	Number of Skylight Mounting Fasteners[2]	Number of Retainer Fasteners[1]	Number of Skylight Mounting Fasteners[3]
1422	12	12	10	10
1414	12	12	8	8
2246	16	16	14	16
2237	14	14	12	14
2230	14	12	12	12
3046	20	10	20	10
3037	18	8	14	8
4242	20	12	16	12
3737	20	12	16	12
3030	16	8	12	8
2222	12	10	10	10
1919	12	10	10	10
4896	28	22	28	22
4848	20	16	20	16
4689	26	20	26	20
4669	24	18	24	18
4646	20	16	20	16
3859	18	18	18	18
3775	22	16	22	16
3746	18	14	18	14
3069	22	16	22	16
6096	26	14	26	14
6072	24	18	24	18
5555	22	16	22	16
5460	24	14	24	14

[1]Aluminum frame to aluminum retainer fasteners are No. 8, TEKS, galvanized steel screws

[2]Metal flange to wood curb (shear) fasteners to attach skylights to wood curbs with specific gravity of 0.50, are No. 6d common nails having sufficient length to penetrate the wood curb a minimum of $1^1/_2$ inches.

[3]Metal flange to wood deck (withdrawal) fasteners to attach skylights to decks with specific gravity of 0.50, are No.16d common nails having sufficient length to penetrate the wood framing a minimum of 3 inches.

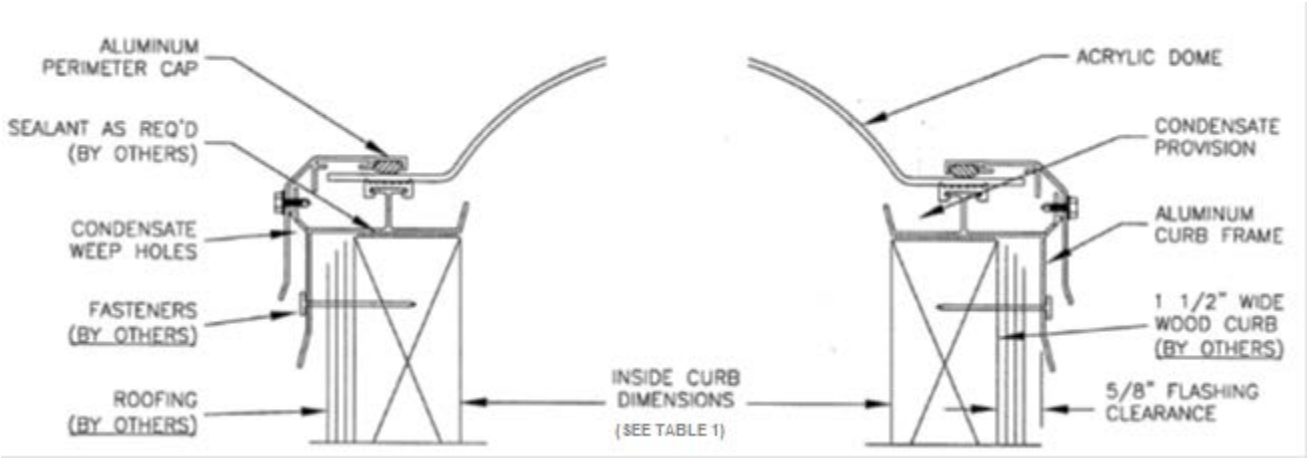

FIGURE 1—AL-CM CURB MOUNT SKYLIGHT

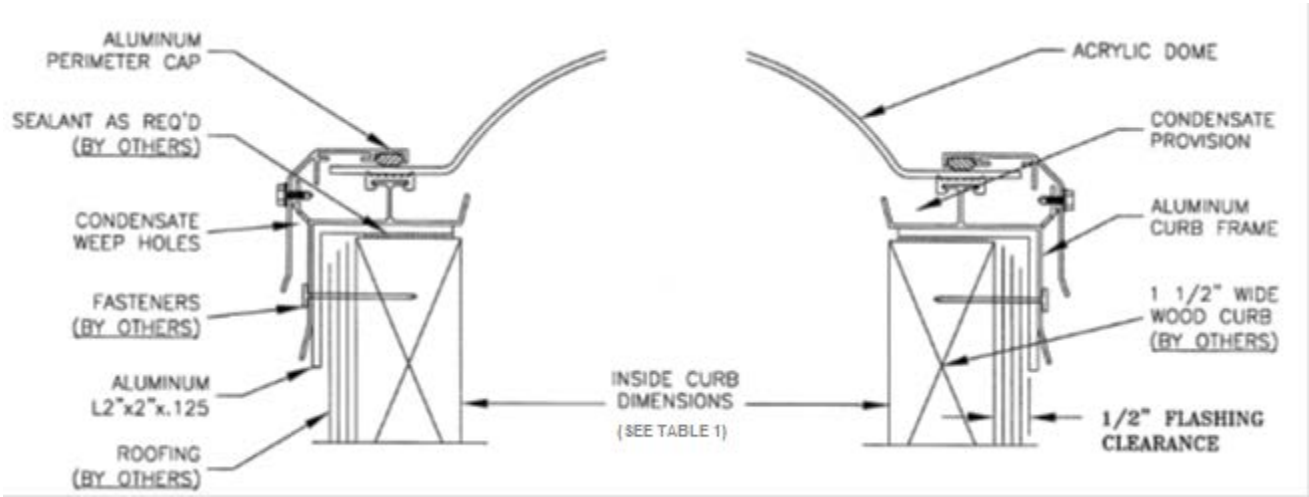

FIGURE 2—AL-CM CURB MOUNT SKYLIGHT (LARGE SIZES)

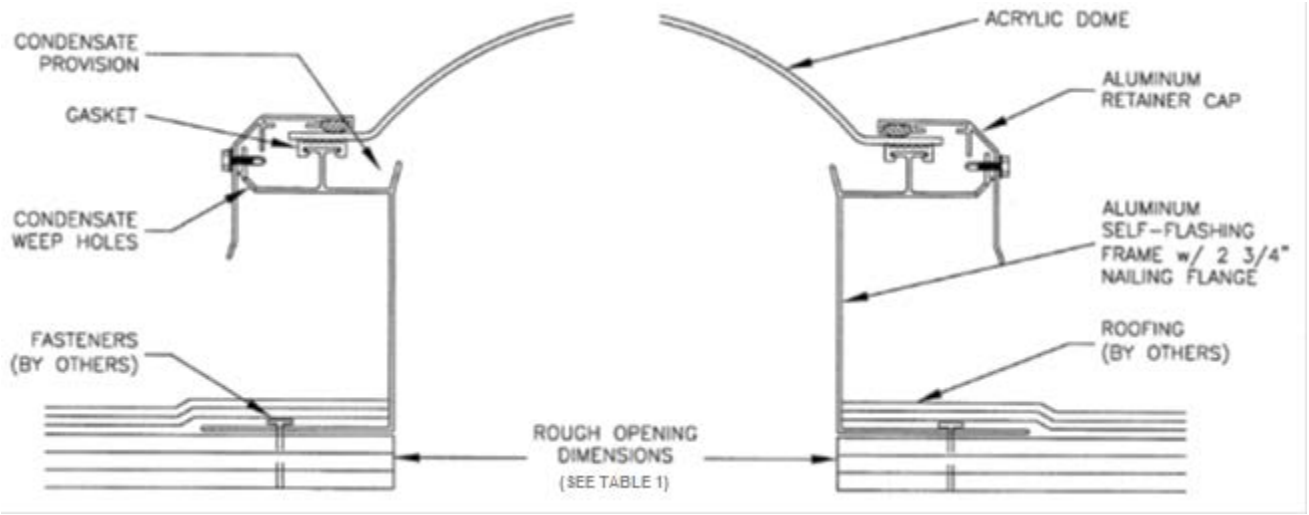

FIGURE 3—AL-SF SELF-FLASHING SKYLIGHT