



TEST REPORT

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EVALUATION CENTER
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RENDERED TO
Artistic Skylight Domes Ltd.
2 Guided Court
Etobicoke, ON M9V 4K6
Attention: Nenzio Ferrazzo

PRODUCT EVALUATED: 48"×48" PVCSR Fixed Plastic Skylight
EVALUATION PROPERTY: Physical Tests

Report of Testing for Artistic Skylights Domes Ltd. on a PVCSR 48"×48" deck-mounted fixed plastic skylight for compliance with the applicable requirements of the following criteria: CAN/CGSB-63.14-M89 "Plastic Skylights".

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2 Introduction

Intertek has conducted performance testing for Artistic Skylight Domes Ltd. on a 48"×48" PVCSR deck-mounted fixed plastic skylight for the Intertek Certification Program. The skylight was submitted to the Intertek laboratory in Mississauga, Ontario on August 14, 2010. Testing was conducted in accordance with the standard methods of CAN/CGSB-63.14-M89 "Plastic Skylights". This evaluation began August 17, 2009 and was completed September 23, 2009.

3 Test Specimen

3.1. SPECIMEN AND ASSEMBLY DESCRIPTION

- Model:**
 - PVCSR Skylight
- Classification:**
 - Class C, Type 2, formed
- Type:**
 - Deck-mounted, aluminum capped, fixed dome plastic skylight
- Manufacturer:**
 - Artistic Skylight Domes Ltd., 2 Guided Court, Etobicoke ON M9V 4K6
- Condition:**
 - New and undamaged

Overall Frame Size:

Overall size (including integral nailing fin)	
Width	Height
1457 mm (57-3/8")	1457 mm (57-3/8")

- Frame:**
 - Extruded vinyl main frame members (Extrusion Profiles Die No. 329C) with mitred and welded corners. The frame was complete with an integral nailing fin.
 - Aluminum Cap- Extruded aluminum cap members (Spectra Aluminum Products Die No. SS-1880) having mitred corners fastened with one #6×1-1/4" pan head screw and a chevron corner key. The corners were liberally sealed with silicone on the backside.
 - Aluminum Head Flashing- Brake-formed 'Z'-shaped 0.46 mm (0.018") thick aluminum flashing having a 337 mm (13-1/4") long leg (fastened to the roof deck), a 60 mm (2-3/8") return, and a 45 mm (1-3/4") long drip edge leg. The flashing measured 1803 mm (71") long overall across the larger leg, the ends of the large leg cut at an angle, and the ends of the return folded at an angle so that the drip-edge leg measured 1378 mm (54-1/4") wide overall.
 - Installation: The unit was installed onto a 2x6 wood support frame with 1/2" plywood sheathing secured to one face, simulating an inclined roof surface, the frame measuring 2438 mm (96") square overall. The skylight was installed over a centrally located opening, its perimeter lined with 2x6 wood members, and measured 1219 mm (48") wide by 1219 mm (48") high.

Frame (cont'd):

The order of installation was as follows:

- The exterior of the plywood, from the bottom edge of the support frame up to the bottom edge of the opening, was faced with self-adhering peel-and-stick waterproofing membrane, then shingled with conventional three-tab asphalt shingles fastened using 1-1/4" long roofing nails, the top (factory) edge of the last course of shingles terminating 178 mm (7") up each side of the opening from the bottom edge. The shingles were cut off leaving a 51 mm (2") strip of exposed membrane below the bottom edge of the opening, and 51 mm (2") of exposed plywood up each edge of the opening adjacent to last course of shingles. A 89 mm (3-1/2") wide bed of silicone was applied to the 51 mm (2") strip of exposed membrane and top 38 mm (1-1/2") of adjacent shingles along the bottom edge of the opening, this silicone bed continued up each side of the opening for approximately 508 mm (20"), applied to the exposed plywood and also to adjacent 178 mm (7") of adjacent shingles.
 - The skylight was then placed over the opening and fastened to the plywood along the head and jambs with 1-1/4" long roofing nails installed in the pre-punched holes along the nailing fin, the holes on 122 mm (4-13/16") centres, 12 nails along the head and eleven per jamb (the lowest hole per jamb was not utilized, but sealed by the bed of silicone. There were no fasteners used along the exposed sill nailing fin. Strips of waterproofing membrane measuring approximately 432 mm (17") wide were then applied along each side of the unit, completely covering the exposed nailing fin and adjacent plywood, and lapping over the last course of aforementioned shingles running up each side of the opening. The membrane lapped over the shingles for 204 mm (8"), the top edge of the shingles sealed to the plywood with silicone for 38 mm (1-1/2") adjacent to the nailing fin before the membrane was applied over the shingles. The membrane was also applied over the nailing fin and adjacent plywood along the top of the unit, the membrane continuous to the top edge of the plywood, and lapping over the membrane along the sides of the unit. The shingles were then installed over the membrane (butting up against the side of the skylight frame) along each side of the unit until the bottom (exposed) edge of the last course of shingles was 51 mm (2") above the top edge of the opening.
 - A brake-formed aluminum flashing was then installed over the head of the skylight using the roofing nails. The waterproofing membrane was applied over the top edge of the flashing, existing membrane above the flashing, and over the shingles either side of the flashing. This section of membrane was the full width of the support frame, overlapping the flashing by 229 mm (9"), the top of the adjacent shingles by 204 mm (8"), and continued up to the top edge of the plywood sheathing. Asphalt shingles were then installed over the membrane, the lower edge of the membrane and shingle course coinciding so that the membrane was concealed. The first row of shingles installed over the flashing was two layers thick, the underlying layer reversed so as to back up the openings between the tabs.
-

- Frame (cont'd):**
- For test purposes, the plywood surface (roof surface) was inclined at 15° to the horizontal.

Note: For air tightness testing only, the inside perimeter of the skylight support frame opening was sealed with red air barrier tape to the inside perimeter of the PVC skylight frame such that the plywood sheathing-to-PVC skylight frame joint was sealed as well as the joint between the plywood sheathing and 2x6 wood support members lining the opening. The tape was removed for water tightness testing.

- Drainage:**
- None (original slots along sill sealed with silicone).

- Glazing:**
- Two domed layers of nominally 3.2 mm (0.125") thick acrylic plastic (Plaskolite) with a 6.4 mm (1/4") air space, the two layers separated about the perimeter with double sided adhesive backed closed cell foam tape (continuous at three corners) measuring 9.5 mm wide by 6.4 mm thick (3/8"x1/4") sandwiched between the layers. The tape joint at the fourth corner was sealed with silicone.

- Glazing Method:**
- Laid in glazed on the interior on a bed of silicone measuring nominally 13 mm (1/2") wide applied on a co-extruded flexible vinyl glazing gasket, and retained with the extruded aluminum capping on the exterior, double-sided adhesive backed closed cell foam tape measuring 6.4 mm wide by 3.2 mm thick (1/4"x1/8") being sandwiched between the exterior domed layer and the back side of the aluminum capping. The corners of the exterior domed layer were also sealed to the back-side of the capping with silicone. The aluminum cap was fastened to the skylight frame using #8x3/4" self-drilling tek screws, six per frame member installed through the side of the capping.

- Drawings:**
- Plan and Cross-Section Drawing:
Artistic Skylight Domes drawing G-PVCSR, undated
 - Component Drawings:
Extrusion Profiles Inc. Die No. 329c, titled "Self Flashing Frame", dated Jan 09, 2004
Spectra Aluminum Products Die No. SS-12291, titled "Retaining Frame", dated Nov/30/2000

Drawings are enclosed with this report in Appendix A.

4 Testing and Evaluation Methods

4.1. AIR INFILTRATION TEST (par. 7.2.3)

The Air Infiltration test was performed in accordance with ASTM E283-04, "*Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen*" and evaluated with the requirements outlined in par. 6.6.1.

The air infiltration test was performed using a test pressure of 75 Pa (1.57 psf). The maximum air infiltration was calculated and compared to the allowable air infiltration.

4.2. WATER RESISTANCE TEST (par. 7.2.4)

The Water Resistance test was conducted and evaluated in accordance with ASTM E331-00, "*Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference*" and evaluated with the requirements outlined in par. 6.6.2. The Water Resistance test was performed using no air pressure differential across the specimen.

The Water Resistance test was performed with the skylight installed into a make-shift roof opening as installed by the client, the installation details contained herein. For the water penetration test, the roof was placed at a 15° incline from horizontal at the specified pressure differential and a water spray rate of at least 204 L/m² per hour (5.0 US gal/ft² per hour). The test duration was 15 minutes.

4.3. UNIFORM STRUCTURAL LOAD TEST (par. 7.2.5)

The Uniform Structural Load test was conducted in accordance with ASTM E330-02, "*Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference*," Procedure A and evaluated with the requirements outlined in par. 6.6.3.

A load equal to one-half the anticipated allowable load was applied and held for less than one minute. The deflection readings were then zeroed. Deflection measurements were taken at the mid-span and ends of the sill. An anticipated allowable load of 2000 Pa (41.8 psf) was then applied and held for not less than 10 seconds. The load was then released. Permanent deflection readings were taken after a recovery period of not less than one minute nor more than five minutes at zero load. The Uniform Structural Load test was performed in both the positive and negative directions. The skylight was evaluated for failure or permanent deformation of any part of the skylight that would cause any operational malfunction.

4.4. SNOW LOAD (par. 7.2.6)

The inner glazing layer was breached and the Uniform Structural Load test (par. 7.2.5) was performed at 2000 Pa (41.8 psf) positive pressure, applying the pressure difference to the outer glazing layer.

5 Testing and Evaluation Results

5.1. Air Infiltration Test (par. 7.2.3)

PVCSR 48x48	
Net Infiltration:	1.02 m ³ /h (0.6 cfm)
Skylight Crack Length	5.020 m (16.46 ft)
Infiltration rate:	0.20 (m ³ /h)/m (0.036 cfm/ft)
Maximum allowable air infiltration rate:	2.79 (m ³ /h)/m (0.5 cfm/ft)

The 48"x48" PVCSR Fixed Skylight **MET** the performance levels specified in CAN/CGSB-63.14-M89 for Air Infiltration.

5.2. Water Resistance Test (par. 7.2.4)

PVCSR 48x48	
Pressure Differential	0 Pa (0 psf)
Skylight Inclination Angle	15°
Results:	No water leakage observed and no water retained within the frame member.

The 48"x48" PVCSR Fixed Skylight **MET** the performance levels specified in CAN/CGSB-63.14-M89 for Water Resistance.

5.3. Uniform Structural Load Test (par. 7.2.5)

Permanent Deflection Test at Structural Pressure		
Test Pressure	<i>Positive Load</i>	<i>Negative Load</i>
	+2000 Pa (+41.8 psf)	-2000 Pa (-41.8 psf)
Post-test Details	After the test loads were released, the skylight was inspected and there was found to be no failure or permanent deformation of any part of the skylight that would cause any operational malfunction.	

The 48"x48" PVCSR Fixed Skylight **MET** the performance levels specified in CAN/CGSB-63.14-M89 for Uniform Structural Load.

5.4. Snow Load Test (par. 7.2.6)

Following the application of a 2000 Pa (41.8 psf) positive wind load on the outer glazing layer, the skylight showed no visible deformation or breakage.


The 48"x48" PVCSR Fixed Skylight **MET** the snow load requirement specified in CAN/CGSB-63.14-M89.

6 Conclusion

The Artistic Skylight Domes Ltd. 48"×48" PVCSR Fixed Skylight described and tested herein met the air infiltration, water penetration, uniform structural load and snow load performance requirements of CAN/CGSB-63.14-M89, "*Plastic Skylights*".

INTERTEK

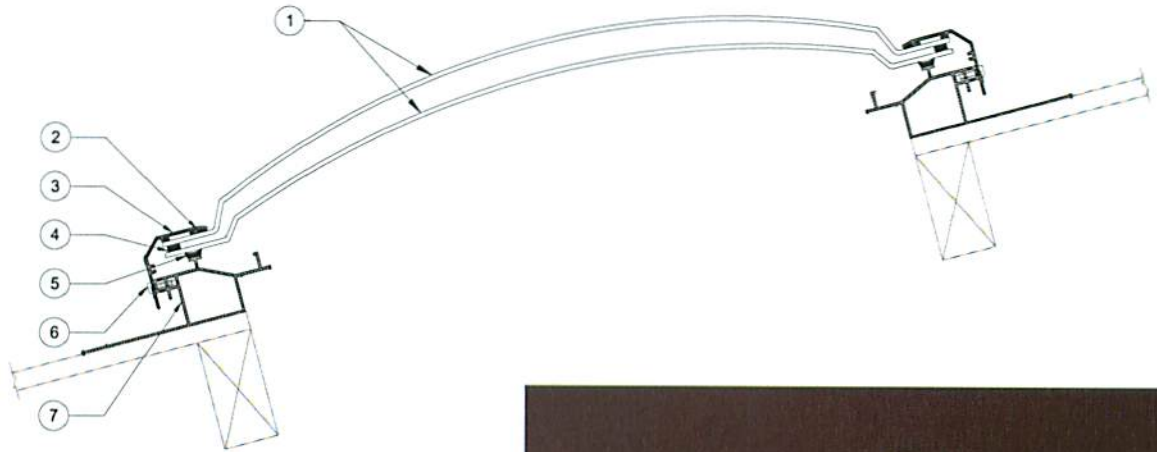
Tested by Mustafa Swalah

Reported by: 
David Wren
Physical Testing Services

Reviewed by: 
Claudio Sacchetto
Physical Testing Services

Appendix A – Parts List / Drawings

(Parts List / Drawings – 3 pages)



MODEL PVCSR (SELF FLASHING FIXED - ACRYLIC DOME GLAZING)

	DETAIL
UNIT 1: DOUBLE DOME	1 - CLEAR 1/8" THK. 2 - CLEAR 1/8" THK.
UNIT 2: DOUBLE DOME	1 - TRANSPARENT BRONZE 1/8" THK. 2 - CLEAR 1/8" THK.
UNIT 3: DOUBLE DOME	1 - CLEAR 1/8" THK. 2 - TRANSLUCENT WHITE 1/8" THK.
UNIT 4: TRIPLE DOME	1 - CLEAR 1/8" THK. 2 - CLEAR 1/8" THK. 3 - CLEAR 1/8" THK.
UNIT 5: TRIPLE DOME	1 - TRANSPARENT BRONZE 1/8" THK. 2 - CLEAR 1/8" THK. 3 - CLEAR 1/8" THK.
UNIT 6: TRIPLE DOME	1 - CLEAR 1/8" THK. 2 - CLEAR 1/8" THK. 3 - TRANSLUCENT WHITE 1/8" THK.

PARTS LIST

MODEL PVCSR (SELF FLASHING FIXED - ACRYLIC DOME GLAZING)

PARTICULAR	MANUFACTURER
1. ACRYLIC GLAZING	PLASKOLITE INC., U.S.A.
2. 1/8" x 1/4" DOUBLE FACE VINYL FOAM GLAZING TAPE	GASKA TAPE INC., PART # 623012020
3. EXTRUDED ALUMINUM RETAINING FRAME (6063-T5 ALLOY)	SPECTRA DIE # SS-1880 & AFP DIE # 228
4. 1/4" x 1/8" DOUBLE FACE VINYL GLAZING TAPE	GASKA TAPE INC., PART # 623025022
5. CO-EXTRUDED RUBBER DRAFT SEAL	EXTRUSION PROFILES INC.
6. #8 - 18 X 1/4" ASSEMBLY SCREW	ROBERTSON, CANADA
7. EXTRUDED RIGID THERMAL PVC CURB MOUNT FRAME	EXTRUSION PROFILES INC., DIE # 328

SKYLIGHT MODEL:

PVCSR



2 Guided Court
 Etobicoke, Ontario, Canada M9V 4K6
 E-mail: artistic@istar.ca
 Web: www.artisticskylight.com

DESCRIPTION: **RETAINING FRAME**

PROPOSAL#: **SP-12291**

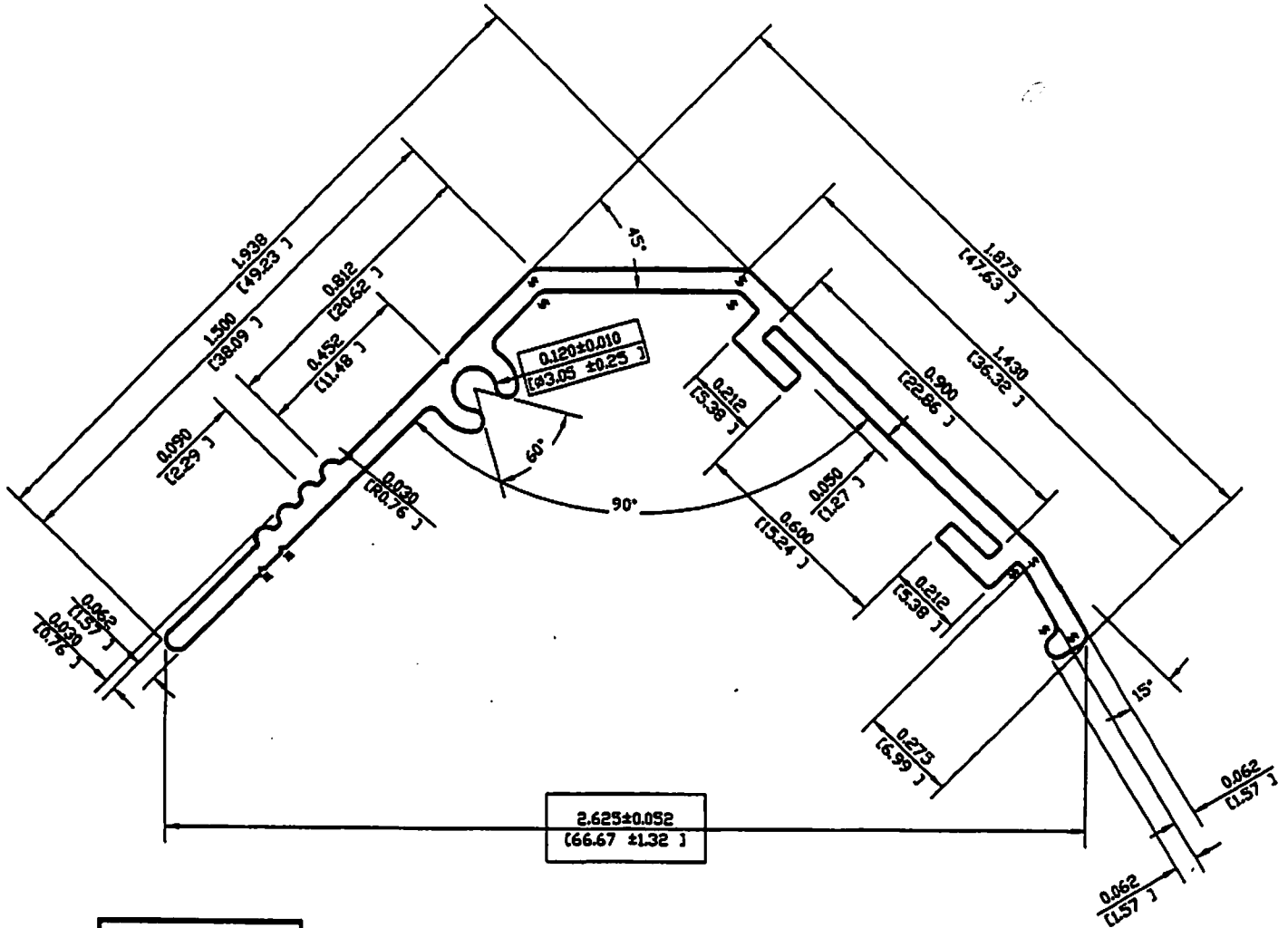
CUSTOMER #
01187233

CUSTOMER: **ARTISTIC SKYLIGHTS**

DIE NO. **SS-1880**

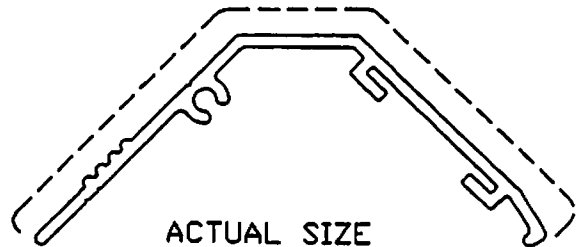
DATE: LET: REVISION: BY:

SPECTRA ALUMINUM PRODUCTS INC.
UNCONTROLLED
Date: **FEB 20 2007**



CAVITY I.D.

EXPOSED SURFACES



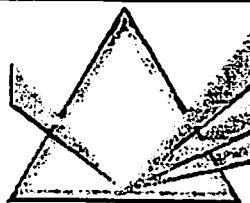
ACTUAL SIZE

NOTE: WALL THICKNESS IS 0.062" (1.57mm) UNLESS OTHERWISE SHOWN
NOTE: BREAK ALL CORNERS AT 0.010" (0.25mm) UNLESS OTHERWISE SHOWN
NOTE: * INDICATES A 0.031" (0.79mm) RADIUS

X.XXX = CRITICAL DIM.

* = 0.010 (0.25) X 90° (SPECTRA ALUMINUM ID MARK)

NOTE:
STANDARD ALUMINUM ASSOCIATION TOLERANCES
APPLY UNLESS OTHERWISE SPECIFIED.



SPECTRA
ALUMINUM PRODUCTS INC.

PRICING: WEIGHT <input checked="" type="checkbox"/>	PIECE: <input type="checkbox"/>	ALLOY: CHECK P.O.	TEMPER: TS
SS NO.: 1	CONTR: 6'	PKT: 3/4"	EXT. RATIO 50.66
PACKER NO.: BA-1632-1	DIE SIZE: 8" x 1"		
BOLSTER NO.: 80-2B	BACKER SIZE: 8" x 3"		
GUAGE:	NITROGEN: <input type="checkbox"/>	CAV.: 2	
DWN. BY: S.B.	SCALE: 2:1	DATE: NOV/30/2000	

EST. AREA: 0.279 sq.in 180.00 sq.mm	INS. PER: in mm
OUT. PER: 8.811 in 223.80 mm	FACTOR: 26.78
EST. VT: 0.329 lbs/ft. 0.489 kg/m	CCD: 2.625 in 66.66 mm