

OSHA FALL PROTECTION TEST REPORT

Rendered to:

VELUX AMERICA INC.

SERIES/MODEL: CAP-1

PRODUCT TYPE: Fixed Acrylic Glazed Skylight

Report No: 90197.01-109-44

Test Date: 04/01/09

Report Date: 10/20/09

Record Retention Date: 04/01/13

OSHA FALL PROTECTION TEST REPORT

Rendered to:

VELUX AMERICA INC.
P.O. Box 5001
(1418 Evans Pond Road)
Greenwood, South Carolina 29648-5001

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Project Summary: Architectural Testing, Inc. was contracted by VELUX America, Inc. to perform testing on three Series/Model CAP-1, fixed acrylic glazed skylights. The test specimen description and results are reported herein. The test specimens were provided by the client.

Test Specification: The test specimens were tested to assess compliance with Occupational Safety and Health Administration/U.S. Department of Labor Regulations (Standards- 29 CFR)-1910.23(e)(8). A 200 lbf weight, fabricated from a bag filled with sand, was placed on the center of the dome for a minimum of 60 seconds. For one specimen, the weight was then dropped from a specified height above the skylight dome with any permanent visible damage being noted.

Test Specimen Description:

Series/Model: CAP-1

Product Type: Fixed Acrylic Glazed Skylight

Test Specimen #1

Overall Size: 48" wide by 48" long

Curb Size: 46-1/2" wide by 46-1/2" long

Overall Area: 16 ft²

Test Specimen Description: (Continued)

Test Specimen #2

Overall Size: 48" wide by 96" long

Curb Size: 46-1/2" wide by 94-1/2" long

Overall Area: 32 ft²

Test Specimen #3

Overall Size: 72" wide by 72" long

Curb Size: 69-1/2" wide by 69-1/2" long

Overall Area: 36 ft²

The following descriptions apply to all specimens.

Finish: All aluminum was anodized.

Weatherstripping: No weatherstripping was utilized.

Glazing Detail: The skylight dome was constructed of two sheets of free blown acrylic, an interior sheet measuring 0.110" thick and an exterior sheet measuring 0.140" thick at the center of the dome. The edges of the acrylic sheets were secured to each other with a layer of double-sided adhesive foam tape. The acrylic dome was set against the aluminum main frame, resting on double-sided adhesive foam tape and secured with an "L" shaped aluminum cover frame. Double-sided adhesive foam tape was utilized between the cover frame and the dome. The cover frame was secured to the main frame with #12 x 1/4" hex head screws, located 5" from each corner and spaced 16" on center.

Frame Construction: The frames of test specimens #1 and #2 were constructed of poured and debridged, thermally improved extruded aluminum members. The frame of test specimen #3 was constructed of extruded aluminum members, with no thermal improvements. The corners were mitered and welded. The frame was set onto a factory applied aluminum curb. The frame was secured to the curb with #12 x 3/9" long sheet metal screws. The curb was constructed of two sheets of 0.030" thick roll-formed aluminum with a nominal 1" thick foam core and a 1" wide by 3/4" tall wood block at the base of the curb. The interior sheet of aluminum was secured to the wood block with staples spaced 1" on center. The corners of the curb were welded. The base of the curb utilized a 3" wide flange, for attaching the curb to the roof deck.

Test Results: The results are tabulated as follows:

OSHA Safety Test

<u>Test Method</u>	<u>Load Location</u>	<u>Results</u>
Test Specimen #1: 48 x 48		
200 lbf	Center of dome	No visible damage
Test Specimen #2: 48 x 96		
200 lbf	Center of dome	No visible damage
Test Specimen #3: 72 x 72		
200 lbf	Center of dome	No visible damage

Note: The 200 lbf weight was gently applied perpendicular to the center of each dome. After 60 seconds of rest time, the weight was removed and there was no visible damage to either skylight.

OSHA Safety Drop Test

<u>Test Method</u>	<u>Load Location</u>	<u>Results</u>
Test Specimen #1: 48 x 48		
200 lbf at rest	Center of dome	No visible damage
700 lbf-ft (42" drop height)	Center of dome	See Note #1

Note #1: At the 42" drop height, the exterior dome broke and testing ceased.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of the retention period, Architectural Testing shall discard such material without notice. Architectural Testing shall service the test report for the full retention period.

Results obtained are tested values and were secured by using the designated test methods. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC:

Jeremy R. Bender
Technician

Michael D. Stremmel, P.E.
Senior Project Engineer

JRB:dem

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Test Equipment (1)

Appendix-B: Photographs (2)

Appendix-C: Drawing (1) Complete drawings packet on file with Architectural Testing, Inc.

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	10/20/09	N/A	Original report issue

Appendix A
Test Equipment

Instrument	Manufacturer	Asset #
200 lb sand filled sack	Architectural Testing, Inc.	N/A

Appendix B
Photographs

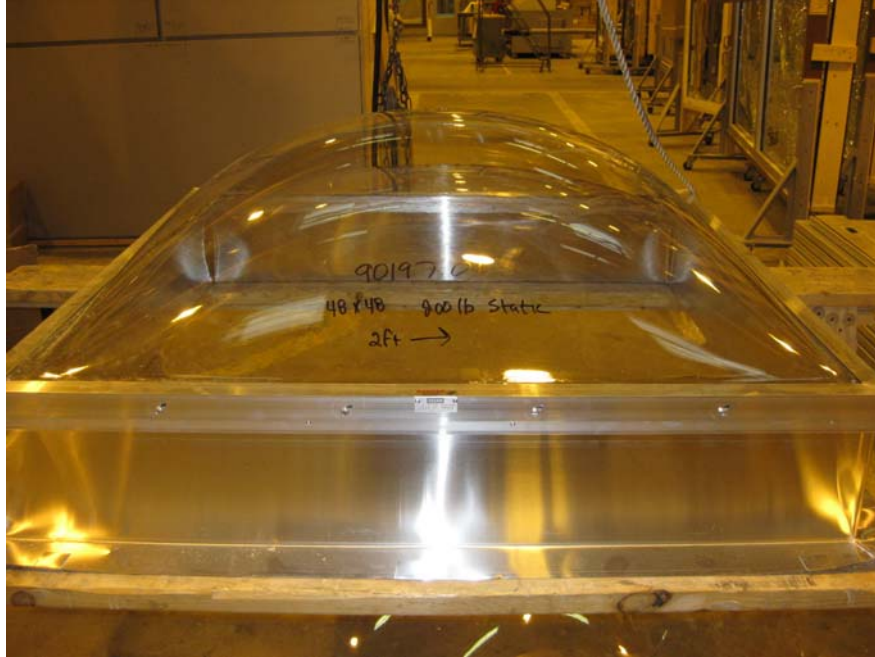


Photo No. 1
Test Specimen #1 (48 x 48) Test Set-Up



Photo No. 2
Test Specimen #1 (48 x 48) Failure

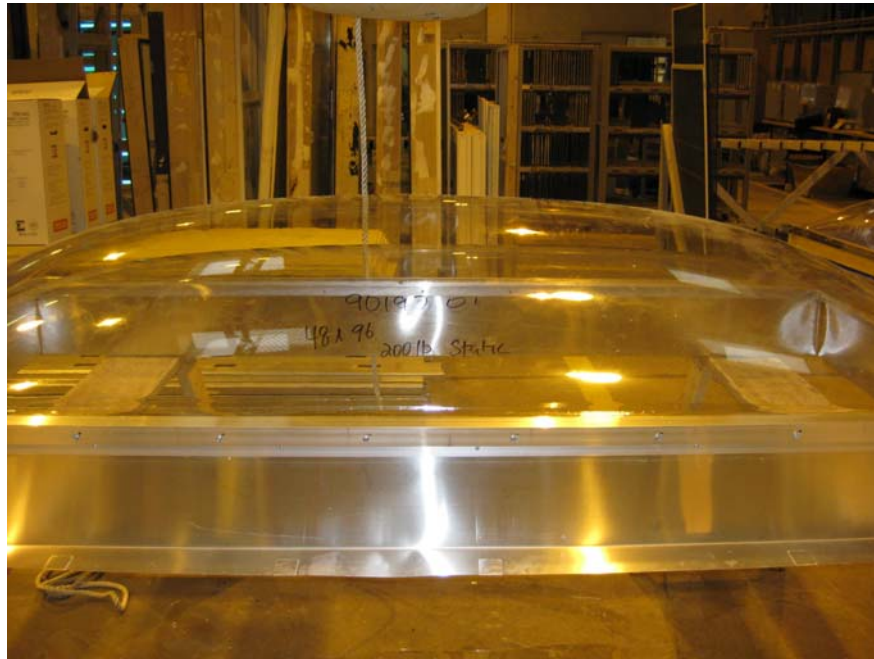


Photo No. 3
Test Specimen #2 (48 x 96) Test Set-Up

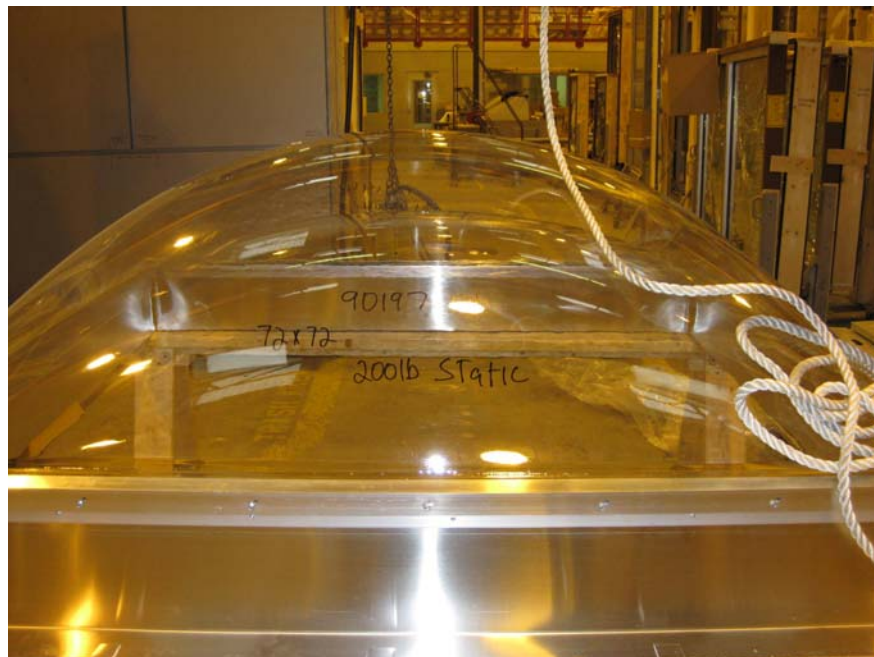
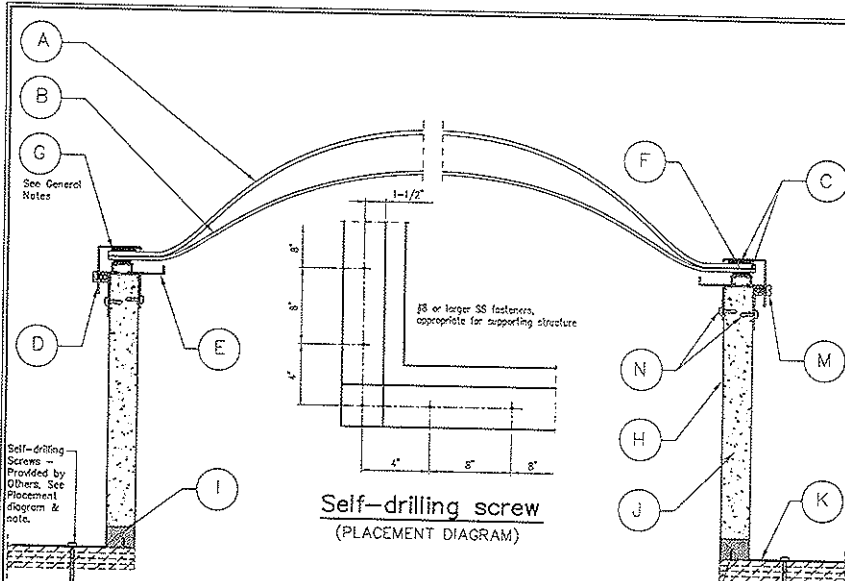


Photo No. 3
Test Specimen #3 (72 x 72) Test Set-Up

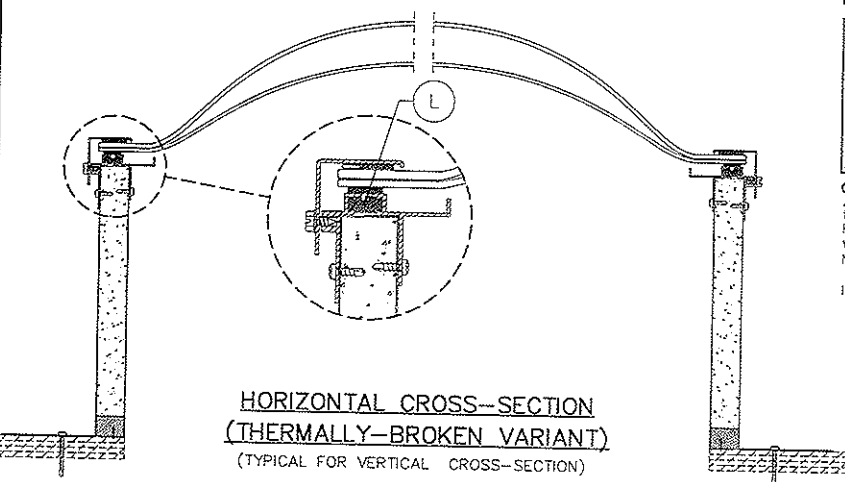
Appendix C

Drawing

Note: Complete drawings packet on file with Architectural Testing, Inc.



HORIZONTAL CROSS-SECTION
(TYPICAL FOR VERTICAL CROSS-SECTION)



HORIZONTAL CROSS-SECTION
(THERMALLY-BROKEN VARIANT)
(TYPICAL FOR VERTICAL CROSS-SECTION)

PART SCHEDULE												
ITEM	QTY	PART	PART NO.	DESCRIPTION	DRAWING NO.			COMMENTS				
					Change	Quantity	Revised Date					
A	1	Outer Dome	303170	Material: 309093.64 309052.64	21	3031	B3D	AC3	803	Profile and cutting		
B	1	Inner Dome	303169	Material: 309093.64 309052.64	21	3031	B4D	AC3	803	Profile and cutting		
C	8	Double-sided Tape	303175		21	3031	B3D	AC5	204	21.CAP SPECIAL.000.00.01 CAP Special Spreadsheet		
D	1	Frame Cover	302258	Aluminum - 6063-T5	21	3022	580	OC	001	Profile drawing		
E	1	Inner Frame	302158	Aluminum type - 6063-T5	21	3021	580	AC	001	Punching drawing		
F	4	Double-sided Tape	303187	Closed cell PVC foam with PSA color: black	21	3021	580	AC	11	OC3	Cutting and punching drawing	
G	4	Sealant	309002	DOW 1199	21	3021	570	AC	4	201	Welding drawing	
H	1	Inner curb cover	308643	AlSI 0.027" mill finish AL	21	3021	570	AC	11	OC3	Profile drawing	
I	4	Support for foam curb	300090	MDF 3/4" thk	21	3021	570	AC	4	201	Cutting drawing	
J	4	Foam board	303172	ISO board 1" thk	21	3021	570	AC	4	201	Welding drawing	
K	1	Outer curb cover	308642	AlSI 0.032" mill finish AL	21	3021	570	AC	3	1	OC3	Profile, notching and bending drawing
L	1	Thermal fill and debris (Optional)	-----	BASF Elastocast 7020BR resin BASF Elastocast 70215F isocyanate	21	3021	570	OC	001	4	Profile drawing	

FASTENER SCHEDULE											
ITEM	QUANTITY	PART	PART NO.	DESCRIPTION	DRAWING NO.			EXPOSED	COMMENTS		
					Change	Quantity	Revised Date				
M	Varies	Hex Washer Head Screw	306100	#12-11 x 3/8", Type B Sheet metal screw, Finish: Clear zinc	21	3061	000	OC	003	●	AlSI 18-8 stainless Finish: Passivated Clear
N	Varies	Self-drilling screw	306109	(Type B50) Pan head #6 x 1/2"	21	3061	000	OC	004	●	AlSI 18-8 stainless Finish: Passivated Clear
O	Varies	Staple	308012	Staples for blow guns & mechanical staple guns	21	4200	000	OC	402	---	Material specification

GENERAL NOTES:
A copy of this drawing plus any other supplemental documentation regarding this skylight model will be maintained at the Skylight Technical Database in the Horizontal and Vertical Cross-Section part sizes, materials and assembly are identical.
V = Visible
NV = Non-Visible

Item **G** (Sealant) is used only on Hip Ridge and Pyramid units. Dome units do NOT require Item **G** (Sealant).

This drawing is an instrument of service and may not be reproduced, copied, published or used in any way without written permission.

VELUX Skylight - 1418 Series Panel Mount - Greenhouse - South America		Revision	
CAP-SELF FLASHED SKYLIGHT		Revision Number	Specification
PRODUCT CERTIFICATION	NTS	Scale	(Checked by/drawn by/Date)
TYPICAL ARRANGEMENT WITH	IRLL/JDH/04.28.09	8 INCHES	
PRODUCT LIST OF PARTS	DRAWING NO.	21	3031
	Project	Commodity No.	Revision
	21	CAP	SP5000

Architectural Testing

Test sample complies with these details.
Deviations are noted.
Report# 90197.01
Date 6/3/09 Tech SRB