

VELUX America LLC

TEST REPORT

SCOPE OF WORK

OSHA FALL PROTECTION TESTING ON
CD2/CE2 SKYLIGHT

REPORT NUMBER

H5831.01-109-44

TEST DATE(S)

09/18/17

ISSUE DATE

10/20/17

RECORD RETENTION END DATE

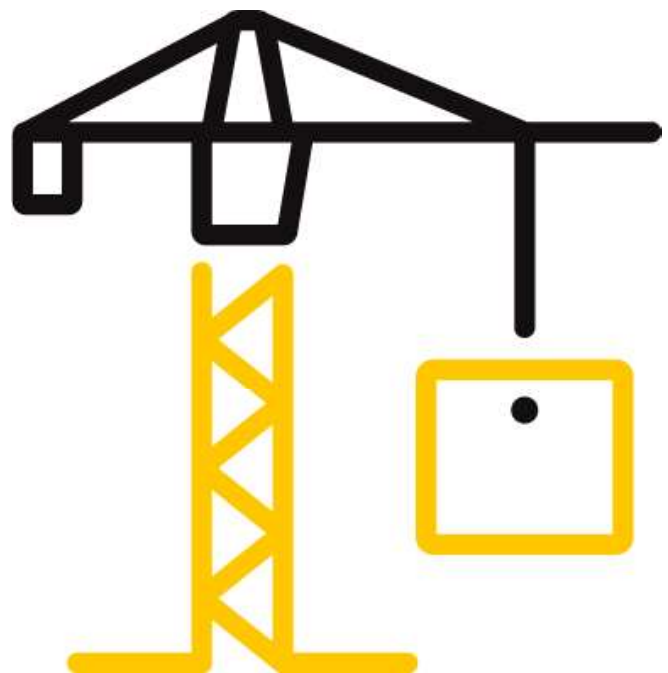
09/18/21

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53

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TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17

REPORT ISSUED TO

VELUX America LLC

1418 Evans Pond Road

P.O. Box 5001

Greenwood, South Carolina 29648-5001


SECTION 1


SCOPE

Intertek Building & Construction (B&C) was contracted by VELUX America LLC, 1418 Evans Pond Road Greenwood, South Carolina to perform OSHA fall protection testing to the referenced document. Occupational Safety and Health Administration (OSHA)/U.S. Department of Labor Regulations Standard 29 CFR §1910.29 – *Fall protection systems and falling object protection-criteria and practices Section 1910.29(e)(1) Is capable of supporting without failure at least twice the maximum intended load that may be imposed on the cover at any one time.* Results obtained are tested values and were secured by using the referenced document. Testing was conducted at Intertek B&C test facility in York, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

Intertek Building & Construction (B&C) was contracted by VELUX America LLC, 1418 Evans Pond Road Greenwood, South Carolina to perform OSHA fall protection testing to the referenced document. California Code of Regulations, *Title 8, Section 3212 §(b)*, which states, "*covers shall be capable of safely supporting the greater of 400 lbs or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time.*" Results obtained are tested values and were secured by using the referenced document. Testing was conducted at Intertek B&C test facility in York, Pennsylvania. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

For INTERTEK B&C:

COMPLETED BY:	Richard E. Hartman III
TITLE:	Technician III – Product Testing
SIGNATURE:	 <small>Digitally Signed by: Richard Hartman III</small>
DATE:	10/20/17

REVIEWED BY:	Timothy J. McGill
TITLE:	Manager – Product Testing
SIGNATURE:	 <small>Digitally Signed by: Timothy J. McGill</small>
DATE:	10/20/17

REH:vlm

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TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17

SECTION 2

SUMMARY OF TEST RESULTS

Product Type: Skylight

Series/Model: CD2/ CE2

SECTION 3

TEST METHOD(S)

The specimen was evaluated in general accordance with the following:

Occupational Safety and Health Administration/U.S. Department of Labor Regulations
(Standards- 29 CFR)- 1910.23(e)(8).

California Code of Regulations, Title 8, Section 3212

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimen(s) was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of two years from the test completion date.

The specimen was installed into a Spruce-Pine-Fir wood curb. The rough opening allowed for a 1/2" shim space. Installation of the tested product was performed by Intertek B&C.

LOCATION	ANCHOR DESCRIPTION	ANCHOR LOCATION
Inner frame	#8 x 1-3/4" pan head screws	8" from each corner and spaced 12" on center

SECTION 5

EQUIPMENT

Int00177 – 400 lb bag

808 – stop watch

SECTION 6

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Timothy J. McGill	Intertek B&C
Richard E. Hartman III	Intertek B&C

TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17

SECTION 7

TEST PROCEDURE

A 400 lbf weight, fabricated from a bag filled with lead shot, was placed on the center of the dome for a minimum of 60 seconds. The bag was removed and the test unit was inspected for any signs of damage or failure.

Additional Loading:

The specimen was taken to failure using sandbags placed on the center of the dome for a minimum of 60 seconds. The highest load causing penetration or damage was recorded.

SECTION 8

TEST SPECIMEN DESCRIPTION

Product Type: Skylight

Series/Model: CD2/CE2

Product Size(s):

OVERALL AREA:	WIDTH		Length	
	millimeters	inches	millimeters	inches
3.5 m ² (38.0 ft ²)				
Overall size	1365	53-3/4	2584	101-3/4
Curb size	1302	51-1/4	2521	99-1/4

Frame Construction:

FRAME MEMBER	MATERIAL	DESCRIPTION
Inner frame	Aluminum	Extruded
Dome clamp cover	Aluminum	Extruded
	JOINERY TYPE	DETAIL
All corners	Mitered	Welded

Weatherstripping:

DESCRIPTION	QUANTITY	LOCATION
Low profile, custom-shaped gasket	1 Row	Located around the interior perimeter of the inner frame

TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17

Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glazing in any glazed test specimen(s) can be made.*

GLAZING TYPE	SPACER TYPE	INTERIOR GLAZING	EXTERIOR GLAZING	GLAZING METHOD
3/8" wide gap	Double-sided adhesive foam spacer	1/8" polycarbonate clear prismatic	1/8" polycarbonate clear smooth	The glazing was set from the exterior onto the low profile gasket against the extruded aluminum frame. The glazing was secured using an extruded aluminum dome clamp cover with a bead of sealant on the glazing. The dome clamp cover was secured using #10 x 5/8" pan head, self-tapping screws located 5-1/8" from the ends and midspan of the length sides.

Drainage:

DRAINAGE METHOD	SIZE	QUANTITY	LOCATION
Weepslot	2" long by 3/4" wide	4	Inner frame corner
Wick	1" long by 3/8" wide by 3/8" high	4	Corners of the low profile gasket

Hardware:

DESCRIPTION	QUANTITY	LOCATION
Spring clip	1 per anchor	Located between the inner frame and dome clamp cover directly above each anchor

TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17

SECTION 9

TEST RESULTS

The temperature during testing was 22°C (72°F). The results are tabulated as follows:

California (and OSHA) minimum loading

TEST METHOD	LOAD LOCATION	RESULTS
400 lbf	Center of Dome	No Visible Damage

Observations: The 400 lbf weight was gently applied perpendicular to the center of each dome; after 60 seconds of rest time, there was no visible damage to the skylight.

Additional loading (applied on the same unit in the listed order):

TEST METHOD	LOAD LOCATION	RESULTS
500 lbf at rest	Center of Dome	No Visible Damage
600 lbf at rest	Center of Dome	No Visible Damage
700 lbf at rest	Center of Dome	No Visible Damage
800 lbf at rest	Center of Dome	No Visible Damage
900 lbf at rest	Center of Dome	Dome inverted
1000 lbf at rest	Center of Dome	No Visible Damage
1100 lbf at rest	Center of Dome	No Visible Damage
1200 lbf at rest	Center of Dome	No Visible Damage
1300 lbf at rest	Center of Dome	No Visible Damage
1400 lbf at rest	Center of Dome	No Visible Damage
1500 lbf at rest	Center of Dome	See note #1
1600 lbf at rest	Center of Dome	See note #2

Note #1: Dome began to deglaze

Note #2: At 1600 lbs, the specimen deglazed causing an opening larger than one square foot.

TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17

SECTION 10**CONCLUSION**

The specimen was evaluated in accordance with *Occupational Safety and Health Administration (OSHA)/U.S. Department of Labor Regulations Standard 29 CFR §1910.29(e)(1)* to be capable of supporting twice the maximum intended load, up to 750 lbf.

The specimen was evaluated in accordance with *California Code of Regulations, Title 8, Section 3212 §(b)* to be capable of safely supporting loads exceeding 400lbs.

SECTION 11**PHOTOGRAPHS**

Photo No. 1
View of Tested Specimen

TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

Date: 10/20/17



Photo No. 2
View of Tested Specimen with 400 lbs Applied



Total Quality. Assured.

130 Derry Court
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TEST REPORT FOR VELUX America LLC

Report No.: H5831.01-109-44

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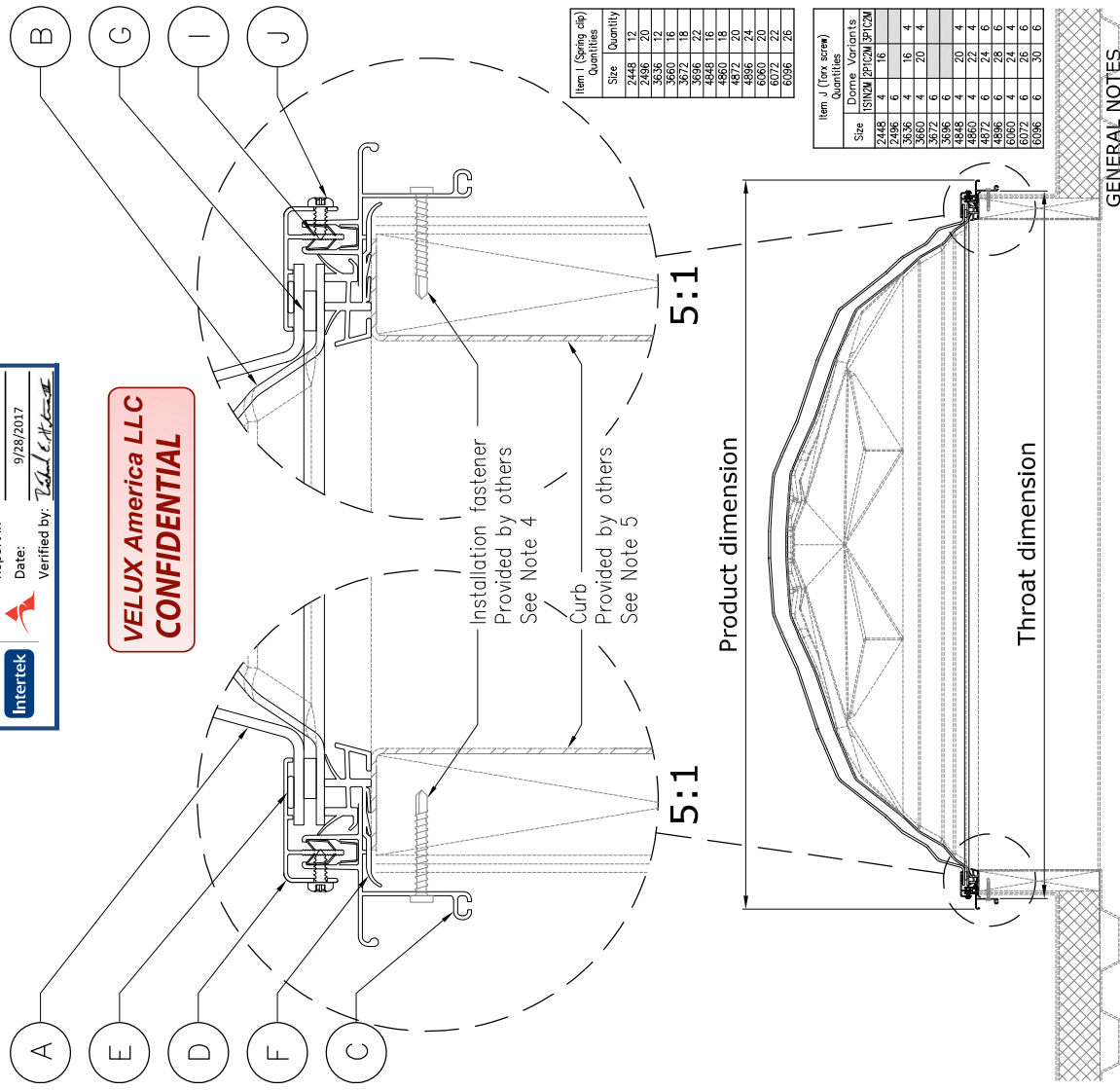
SECTION 12

DRAWINGS

The test specimen drawings have been reviewed by Intertek B&C and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek B&C per the drawings included in this report. Any deviations are documented herein or on the drawings.

	Report #:	H5831.01
	Date:	9/28/2017
Verified by:		<i>Richard E. H. [Signature]</i>

VELUX America LLC
CONFIDENTIAL



Item 1 (Spring clip)	Quantities	
	Size	Quantity
	2448	12
	2496	20
	3636	12
	3660	16
	3672	18
	3696	22
	4948	16
	4960	18
	4872	20
	4896	24
	6060	20
	6072	22
	6096	26

Item J (Tox screen)	Quantities	
	Size	Dome Variants
	2448	1S12M 2P1C2M 3P1C2M
	2496	6
	3636	4 16 4
	3660	4 20 4
	3672	6
	3696	6
	4848	4 20 4
	4860	4 22 4
	4872	6 24 6
	4896	6 28 6
	6060	4 24 4
	6072	6 26 6
	6096	6 30 6

GENERAL NOTES

- Not Visible in this drawing**
1. The parts listed are for Q02 CEZ Commercial Dome skylights.
2. A copy of this drawing plus any other supplemental documentation regarding this skylight model will be maintained at the Skylight Technical Database in the following category location – Technical Data/Submittal Data/Horizontal and Vertical Frame Cross-Section part sizes, materials and assembly are identical.
3. The parts listed are for Q02 CEZ Commercial Dome skylights. They are not intended for use as replacement hardware per piece of liner frame.
4. The parts listed are for Q02 CEZ Commercial Dome skylights. They are not intended for use as replacement hardware per piece of liner frame.
5. The Q02/CEZ skylight installs directly on site built or prefabricated cuts, provided by others. Q02/CEZ skylights may also be shipped on to VELUX cut designs.

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

(TYPICAL FOR FRAME VERTICAL CROSS-SECTION)

PART SCHEDULE					
ITEM QTY.	PART	PART NO.	DESCRIPTION	DRAWING NO. Sheet Revised	COMMENTS
A 1	Dynamic exterior dome	-----	Polycarbonate, or acrylic, or impact modified acrylic	213036150A032D4	Thermofomed exterior dome
B 1	Dynamic second dome	-----		21309079 6402	Material specification
				213023590000001	Profile
				213023590A031D6	Cutting and punching
C 1	Inner frame	302359	6063/T5 Aluminum Powder coat color: NCS S 7500-N (grey)	213023590A03902	Powder coat
				213023590A042D2	Welding
				213023590A052D2	Pin/riv placement
				21309078 6402	Extruded Aluminum-Generally, Material specification
				213023610000005	Profile
D 1	Dome clamp cover	302361	6063/T6 Aluminum Powder coat color: NCS S 7500-N (grey)	213023610A031D7	Cutting and drilling
				213023610A03902	Powder coat
				213023610A042D2	Welding
				21309219 6401	Extruded Aluminum-Generally, Material specification
E N/A	Commercial sedant	305660	Silicone for commercial application	21309200 6403	Powder coating Material specification
				213036600A052D3	Silicone placement
				21309213 6401	Material specification
				213036110000004	Profile
F 1	Low profile gasket	303611	TPE Color: Black	213036110003902	Gasket groove cutting
				213036110A031D1	Gasket cutting
				213036110A042D4	Gasket welding
				21309034 6403	Material specification
G N/A	Double sided foam spacer tape between domes	303613	Double sided foam tape between domes	213036130000002	
				2130361300005201	Placement drawing
H* 4	Felt wick	305659	Polyethylene felt for wicking	21309211 6401	Material specification
				213056590000002	Profile/cutting
				213066229000005	Wick placement
I -	Spring clip	306222	301 Spring Temper Stainless Steel	213062220A052D2	Spring clip placement
				21309218 6401	Material specification
K* 2	Danger label	445433	*Full protection tested* label on Dome clamp cover	214454330000001	(i) label on short side, (i) label on long side

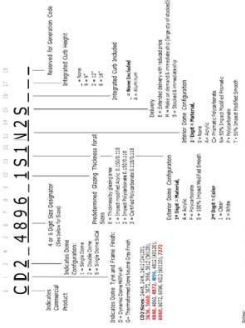
FASTENER SCHEDULE					
ITEM QTY.	PART	PART NO.	DESCRIPTION	DRAWING NO. Sheet Revised	COMMENTS
J -	Six lobe screw	306225	Six lobe Modified lobe head SST #3 all post #10-16c/18	213062250000002	Commodity drawing
				21309215 6401	Material specification

FASTENER SCHEDULE

ITEM	QTY	PART	PART NO.	DESCRIPTION	DRAWING NO.		COMMENTS
					Issued	Issued Date	
J	-	Six lob screw	306225	Six lob Modified Truss head, SST, 4 1/2 inch #10-32x5/8	21306225	5000000002	Commodity drawing
					21309215	6401	Material specification

Commercial Dome Codes In SAP

How to Create Finished Material Numbers



Size	Throat dimension mm.	Product dimension mm.
2'	717	758
3'	1022	1063
4'	1326	1368
5'	1631	1673
6'	1936	1975
8'	2544	2657
10'	3152	3297
12'	3760	3884
20'	646	687
30'	946	1005
40'	1245	1305
46'	1352	1435

for CMA retrofits

[illegible]



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Report No.: H5831.01-109-44

Date: 10/20/17

SECTION 13

REVISION LOG

REVISION #	DATE	PAGES	REVISION
0	10/20/17	N/A	Original Report Issue