

**AAMA/WDMA/CSA 101/LS.2/A440-05
TEST REPORT**

Rendered to:

WASHOE EQUIPMENT, INC. DBA SUNOPTICS PRISMATIC SKYLIGHTS

**SERIES/MODEL: 800MD Double-Hip
PRODUCT TYPE: Fixed Plastic Glazed Skylight**

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
Primary Product Designator	SKP-C30 1346 x 2665 (53 x 105)	SKP-C30 1621 x 1929 (64 x 76)
Design Pressure	1440 Pa (30.1 psf)	1440 Pa (30.1 psf)
Negative Design Pressure	1440 Pa (30.1 psf)	1920 Pa (40.1 psf)
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)	580 Pa (12.11 psf)
Air Infiltration	0.21 L/s/m ² (0.04 cfm/ft ²)	0.21 L/s/m ² (0.04 cfm/ft ²)
Uniform Load Structural Test Pressure	±2880 Pa (±60.15 psf)	+2880 Pa (+60.15 psf) -3840 Pa (-80.20 psf)

Test Completion Date: 12/22/09

Reference must be made to Report No. 95749.01-301-44, dated 02/10/10 for complete test specimen description and data.

AAMA/WDMA/CSA 101/I.S.2/A440-05 TEST REPORT

Rendered to:

WASHOE EQUIPMENT, INC. DBA SUNOPTICS PRISMATIC SKYLIGHTS
6201 27th Street
Sacramento, California 95822

Report No.: 95749.01-301-44
Test Dates: 10/29/09
Through: 12/22/09
Report Date: 02/10/10
Expiration Date: 12/22/13

Project Summary: Architectural Testing, Inc. was contracted by Washoe Equipment, Inc. dba Sunoptics Prismatic Skylights to perform testing on two Series/Model 800MD Double-Hip, Fixed Plastic Glazed Skylights. The samples tested successfully met the performance requirements for the SKP-C30 1346 x 2665 (53 x 105) and SKP-C30 1621 x 1929 (64 x 76). Test specimen descriptions and results are reported herein. The samples were provided by the client.

Test Specification: The test specimens were evaluated in accordance with:

AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights.*

Test Specimen Description:

Series/Model: 800MD Double-Hip

Product Type: Fixed Plastic Glazed Skylight

Test Specimen #1:

Dimensions:

Overall Frame OD: 1346 mm (53") wide by 2531 mm (104-7/8") long
Overall Height: 323 mm (12-11/16") high including frame
Curb OD: 1321 mm (52") wide by 2642 mm (104") long
Aluminum Glazing Retainer: 1282 mm (50-1/2") wide by 2601 mm (102-3/8") long
Glazing Thickness before forming: 5.33 mm (0.210")
Dome Rise: Approximately 241 mm (9-1/2")

Overall Area: 3.59 m² (38.6 ft²)

Test Specimen Description: (Continued)

Test Specimen #2:

Dimensions:

Overall Frame OD: 1621 mm (63-13/16") wide by 1929 mm (76") long
 Overall Height: 368 mm (14-1/2") high including frame
 Curb OD: 1594 mm (62-3/4") wide by 1905 mm (75") long
 Aluminum Glazing Retainer: 1556 mm (61-1/4") wide by 1864 mm (73-3/8") long
 Glazing thickness before forming: 5.21 mm (0.205")
 Dome Rise: Approximately 286 mm (11-1/4")

Overall Area: 3.13 m² (33.7 ft²)

Both Specimens:

Frame Construction: The extruded aluminum frame corners were mitered and fully welded. An extruded vinyl thermal separator was snap-fitted to the frame. The hollow between the separator and frame was filled with expanded polystyrene. The thermal separator on the short side was butted and sealed with silicone to the long side.

Drainage:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
2" x 3/16" weep slot	2	Long frame side, 6" from opposite corners

Weatherstripping:

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1/2" vinyl weathersweep	1 Row	Frame perimeter facing outer curb, inserted into T-slot.

Dome: The domes consisted of a single sheet of white prismatic 50% impact acrylic formed into a shape consisting of four flat sloping sides converging from the rectangular frame into a center ridge and double-hip at the top of the dome.

Test Specimen Description: (Continued)

Glazing Details: The specimen was exterior glazed and secured with an extruded aluminum retainer with serrations to engage the aluminum frame. The dome was fully embedded in sealant applied to the frame prior to setting the dome and to the dome prior to installing the retainer. Two different glazing compounds were utilized. Dow Corning 795 silicone sealant was applied between quarter points on each side. GE SCS1000 silicone sealant was utilized in the remaining areas. The retainer corners were mitered. The retainer was secured to the aluminum frame using eight #6 x 1/2" hex washer head self-drilling steel screws, two screws per corner located 1-1/2" from each end.

Finish: All aluminum was mill finish and all vinyl was white.

Installation: Each skylight was mounted according to the manufacturer's instructions (Reference Appendix D) onto a test curb fabricated from nominal 2 x 8 Douglas Fir No. 2 lumber. The specimens were attached with #12 x 1-1/2" hex washer head self-tapping screws through pre-punched screw holes located approximately 8" from each corner and 12" on center. A 1-1/2" x 1/4" adhesive backed foam pad attached to the skylight frame provided a seal to the curb.

Test Results: The temperature during testing was 17°C (63°F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
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Test Specimen #1:

5.3.2.1	Air Leakage Resistance per ASTM E 283 75 Pa (1.57 psf)	0.21 L/s/m ² (0.04 cfm/ft ²)	1.5 L/s/m ² max. (0.3 cfm/ft ²)
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Note #1: *The tested specimen exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance.*

5.3.3.2	Water Penetration Resistance per ASTM E 331		See Note #2
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Note #2: *The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".*

Test Results: (Continued)

Test Specimen #1: (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.4.2	Uniform Load Deflection per ASTM E 330 (Loads were held for 60 seconds) (Deflections were taken on the frame between anchors.)		
	1440 Pa (30.08 psf) (positive)	<0.3 mm (<0.01")	See Note #3
	1440 Pa (30.08 psf) (negative)	0.3 mm (0.01")	See Note #3

***Note #3:** The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440-05 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

5.3.4.3	Uniform Load Structural per ASTM E 330 (Loads were held for 60 seconds) (Permanent sets were taken on the frame between anchors.)		
	2880 Pa (60.15 psf) (positive)	<0.3 mm (<0.01")	0.9 mm (0.04") max.
	2880 Pa (60.15 psf) (negative)	<0.3 mm (<0.01")	0.9 mm (0.04") max.

Optional Performance

4.4.2.6	Water Penetration Resistance per ASTM E 331 580 Pa (12.11 psf)	No leakage	No leakage
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Test Specimen #2:

5.3.2.1	Air Leakage Resistance per ASTM E 283 75 Pa (1.57 psf)	0.21 L/s/m ² (0.04 cfm/ft ²)	1.5 L/s/m ² max. (0.3 cfm/ft ²)
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***Note #1:** The tested specimen exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance.*

5.3.3.2	Water Penetration Resistance per ASTM E 331		See Note #2
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***Note #2:** The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".*

Test Results: (Continued)

Test Specimen #2: (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.4.2	Uniform Load Deflection per ASTM E 330 (Loads were held for 60 seconds) (Deflections were taken on the frame between anchors.)		
	1440 Pa (30.08 psf) (positive)	0.5 mm (0.02")	See Note #3
	1440 Pa (40.10 psf) (negative)	0.5 mm (0.02")	See Note #3
5.3.4.3	Uniform Load Structural per ASTM E 330 (Loads were held for 60 seconds) (Permanent sets were taken on the frame between anchors.)		
	2880 Pa (60.15 psf) (positive)	0.3 mm (0.01")	0.9 mm (0.04") max.
	3840 Pa (80.20 psf) (negative)	0.3 mm (0.01")	0.9 mm (0.04") max.

Optional Performance

4.4.2.6	Water Penetration Resistance per ASTM E 331 580 Pa (12.11 psf)	No leakage	No leakage
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Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein.

List of Official Observers:

<u>Name</u>	<u>Company</u>
Dennis Janzen	Architectural Testing, Inc.
Mason Kelly	Architectural Testing, Inc.
David Douglass	Architectural Testing, Inc.

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 this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. 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.

David Douglass
Project Manager

Kenny C. White
Laboratory Manager

DD: ms

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

- Appendix-A: Alteration Addendum (1)
- Appendix-B: Test Equipment (1)
- Appendix-C: Installation Instructions (1)
- Appendix-D: Drawings (5)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	02/10/10	N/A	Original report issue

Appendix A

Alteration Addendum

Note: No alterations were required.

Appendix B
Test Equipment

Instrument	Manufacturer	Asset #
Control Panel	ATI	005724
Control Panel	ATI	Y003301
Water Spray Rack	ATI	4047
Linear Transducer	Celesco	4487
Linear Transducer	Celesco	3430
Linear Transducer	Celesco	4484

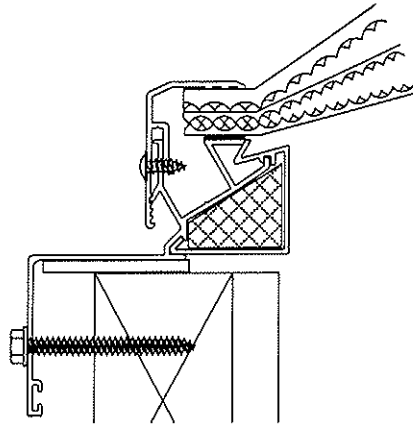
Appendix C

Installation Instructions

SKYLIGHT INSTALLATION INSTRUCTIONS

1. Set skylight over prepared, flashed curbs, making sure skylight is square and evenly spaced on all four sides.
2. Mount skylight to the curb with plated, galvanized or aluminum screws, Using 1 fastener for each hole provided. Drive screws just snug to the skylight flange. Check skylight for squareness and readjust screws as necessary.

NOTE: *Caulking the top of the curb for an air seal is not required with Sunoptics skylights. All double and triple glazed units are supplied with a 1 1/2 inch by 1/4 inch air seal tape premounted on the underside of the skylight.*

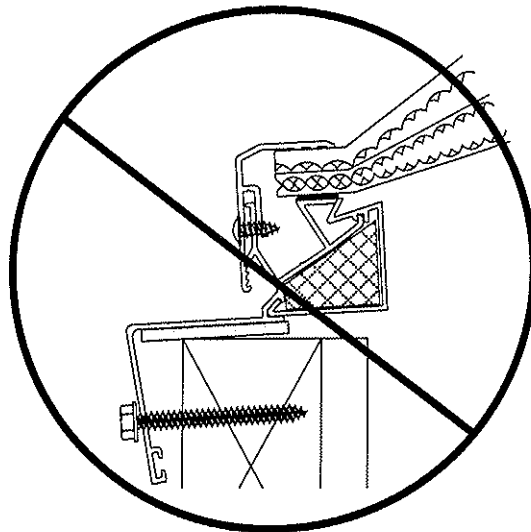


CORRECT MOUNTING

800MD frame shown. Installation instructions are similar for all Sunoptics curb mounted skylights.

NOTE:

When securing the skylight to the curb, run screws just snug to the skylight flange. Overtightening will distort the flange. This in turn may create forces which could crack the skylight lenses, or force it to pull out. This may void the warranty.



INCORRECT MOUNTING

Architectural Testing, Inc.
Test samples comply with these details
if conditions are noted

9 5 7 4 9

and 21 2010

Report#

Date

Tech

Received By _____ Date _____

Appendix D

Drawings

210° 50% IM ACRYLIC
CLEAR PRISMATIC
LENS



Architectural Testing, Inc.
Test sample complies with these details
Deviations are noted

95749

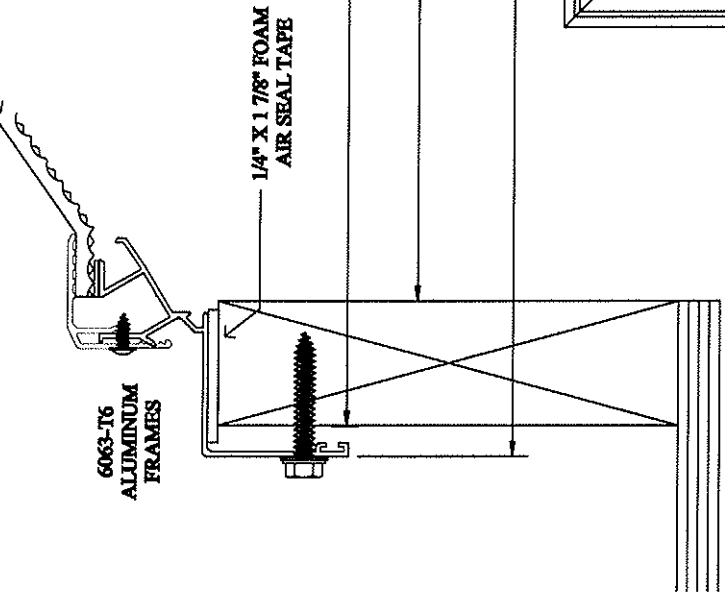
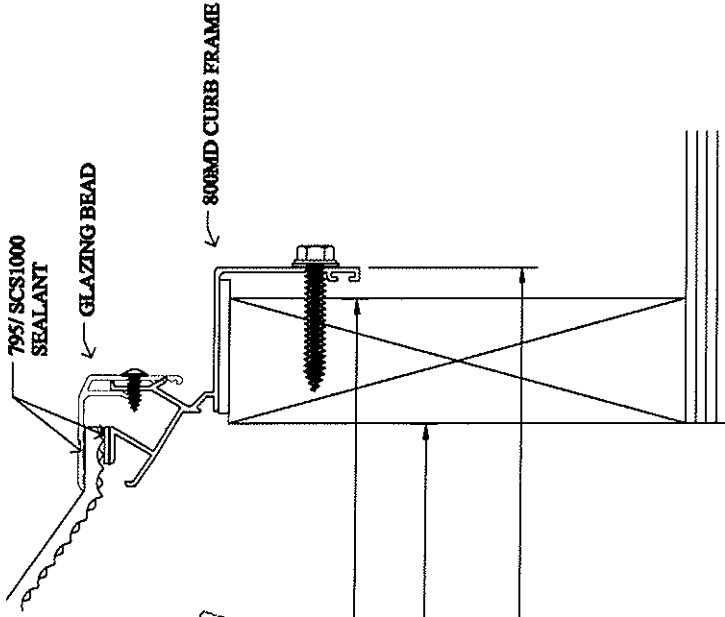
Report#

21 2010

Tech

D2

Date

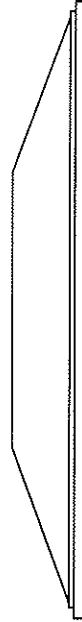
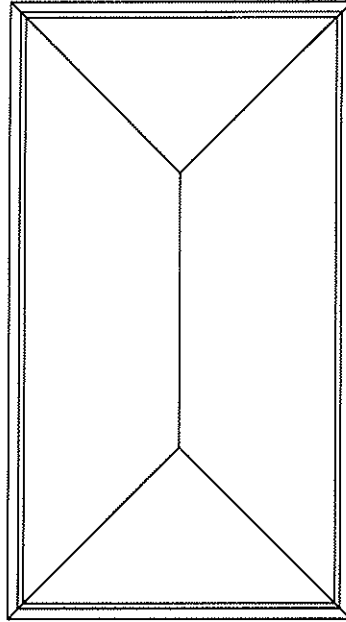


O.D. CURB

I.D. CURB

NET FRAME

1346 x 2531



4286 MODEL 800MD
FIXED DOUBLE HIP
SKYLIGHT

6201 27th STREET
SACRAMENTO, CA. 95822
916/395-4700
FAX/395-9204

205
225° 50% IM ACRYLIC
CLEAR PRISMATIC
LENS



Architectural Testing, Inc.
Test sample complies with these details
Discrepancies are noted

95749

Report#

Tech

Date

JAN 21 2010

795/SCS1000
SEALANT

GLAZING BEAD

800MD CURB FRAME

1/4" X 1 7/8" FOAM
AIR SEAL TAPE

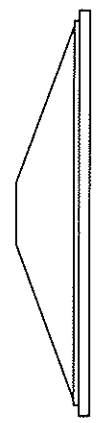
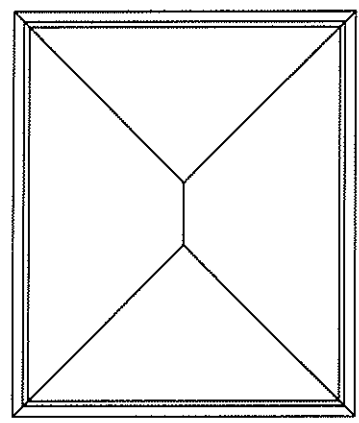
6063-T6
ALUMINUM
FRAMES

O.D. CURB

I.D. CURB

1621 x 1979

NET FRAME



5060 MODEL 800MD
FIXED DOUBLE HIP
SKYLIGHT

6201 27th STREET
SACRAMENTO, CA. 95822
916/395-4700
FAX/395-9204

32048
 DRAWING NUMBER
 B-38807
 DRAWING NUMBER

SUNOPTICS SKYLIGHTS
 CUSTOMER NAME

DATE 1-7-2005
 PART NAME FRAME
 PART NO B

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS OTHERWISE SPECIFIED

* DIMENSIONS CRITICAL DIMENSION OR TOLERANCE

ID = Sapa, Inc. ID MARK .015 R X .015 DEEP UNLESS OTHERWISE SPECIFIED. TYP WALL THICKNESS .055 TYP RAD UNLESS OTHERWISE SPECIFIED.

7933 NE 21st Ave
 Portland, OR 97211-0263
 (503) 547-0790

32048
 DWG NUMBER

B-38807
 DRAWING NUMBER

DATE 1-7-2005

THIS IS NOT A SAPA, INC. DESIGN
 SAPA, INC. ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE PERFORMANCE OF PRODUCTS PRODUCED THEREFROM. SAPA, INC. MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WITH REGARD TO THIS DRAWING.
 PRODUCED PURSUANT TO THIS DRAWING.

AREA	15.095
PERI	15.095
COFAC	35.130
TYPE	SOLID
LEVEL	
DRN BT	GAB
DE SIZE	9 X 2
FT FLT	
PACKER	6708
RELIER	136
SUS REL	
POLES	1
BLURYS	6 176

EXPLODED SURFACE

DETAIL 'B' 2 X SIZE

DETAIL 'C' 2 X SIZE

DETAIL 'A' 2 X SIZE

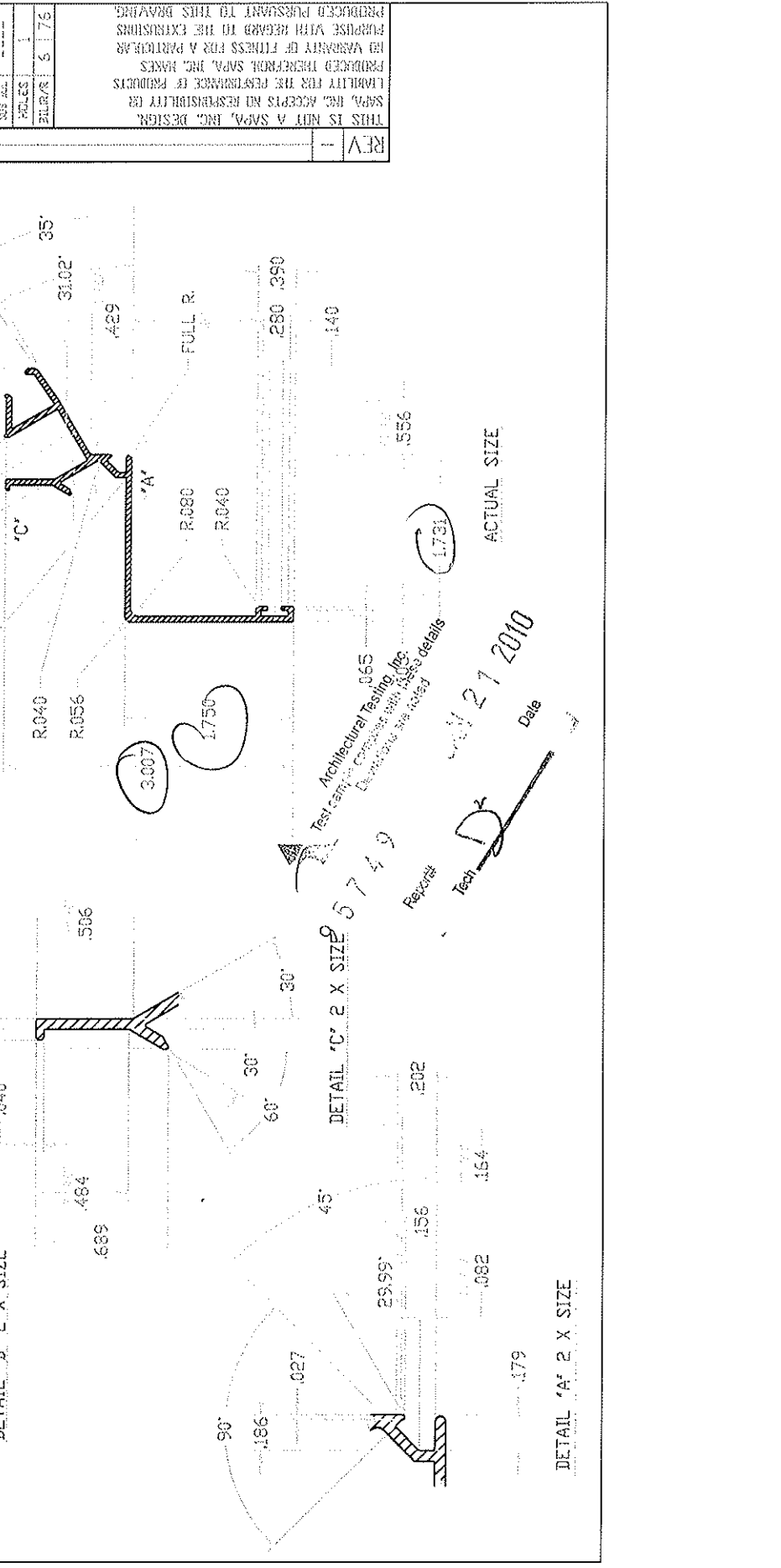
Architectural Testing Inc.
 Test center, Corvallis, OR 97331
 Details to be noted

5749
 Revise#

5/27/2010
 Date

179

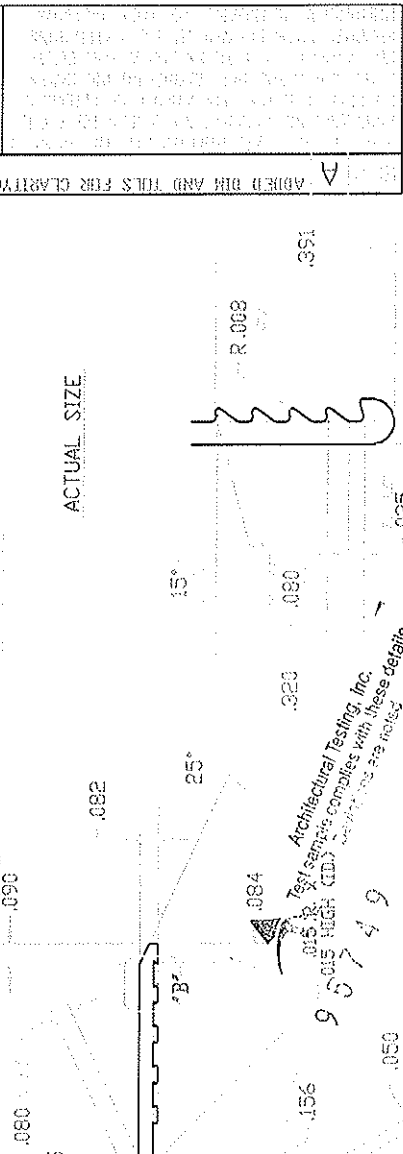
ACTUAL SIZE



NOTES:
 1. ALUMINUM ASSOCIATION STANDARD TOLERANCES
 APPLY UNLESS OTHERWISE SPECIFIED

183327	B-23757	ANODIZING INC	SUNOPTICS SKYLIGHTS	18327
ID		CLIP		B
3-12-97				

18327	B-23757
.232	
.193	
6.558	
19 28	
S-101 II	
JUG	
9 X 1-1/2	
5765	
310	
45	
4	
7' 5/4	



Architectural Testing Inc.
 Test samples comply with these details
 9 57 49
 MAY 21 2010
 Detail 'A' 4x
 Detail 'B' 8x
 2 X SIZE

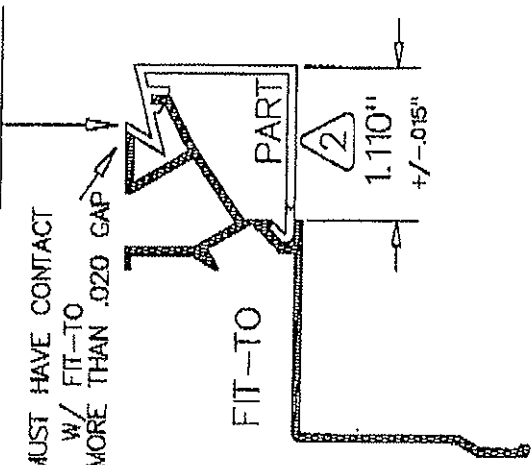
Architectural Testing, Inc.
 Test samples prepared with these details
 Contact us area noted

95749

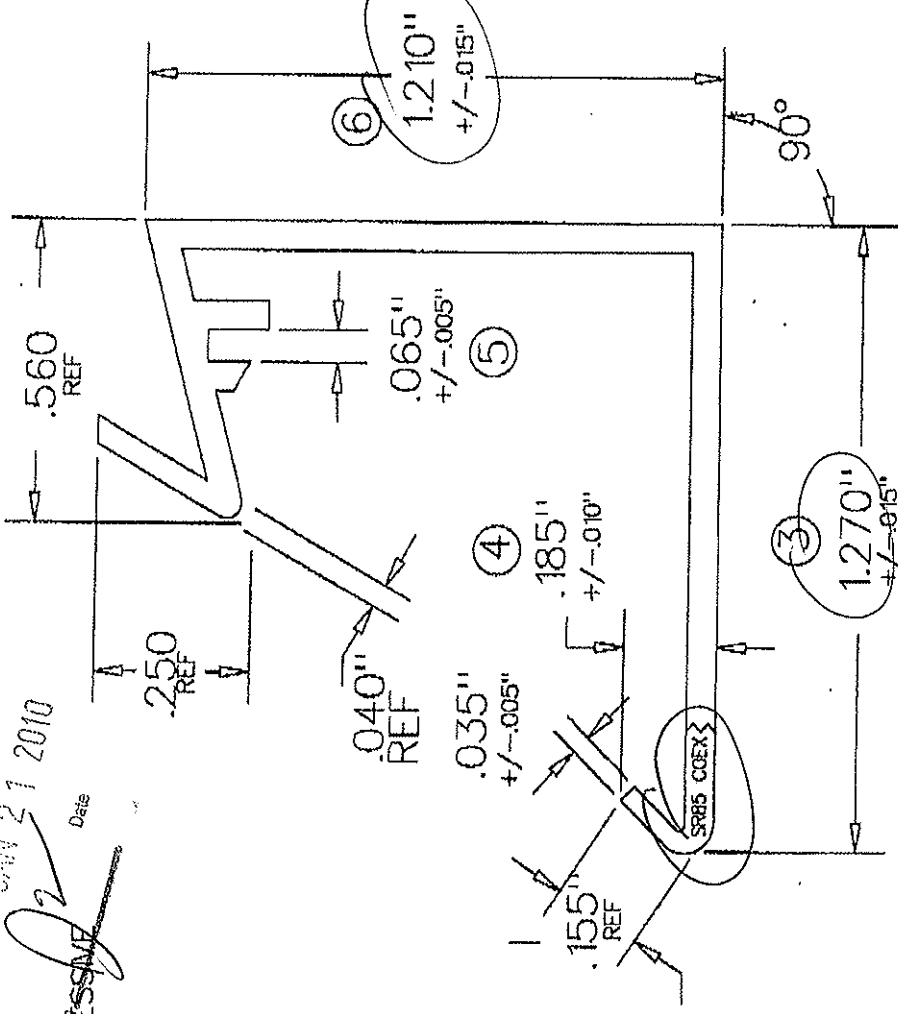
Report# 2
 Date JAN 21 2010

NOTES:

- ① 1) 55 GRAMS/FT +/-2.8 G
- 2) NO WAVY OR BUMPY EDGES
- 3) NO TWIST
- PART MUST SNAP IN FIT-TO WITHOUT EXCESSIVE PRESSURE AND CANNOT PULL OFF WITH THUMB PRESSURE FROM DIM ②
- PART MUST BE FLUSH OR MAY EXCEED FIT-TO BY .040 MAX.



check length as cooled
 end cuts must be square



REV	DESCRIPTION	DATE
J	ADDED GRAM TOLERANCE	8/26/02 AF
I	CHANGED TO CUST. APPROVED SAMPLE	02/14/02 DF
H	PART REDESIGN	02/06/02 DB~
G	ADDED DART IMPACT TEST	12/06/01 DF
F	REVISED NOTES	11/20/01 DB~
E	REDESIGNED PER PRODUCTION MANAGER REQUEST	05/04/01 DB~
D	CHANGED DIM B FROM REFERENCE	03/16/01 DB~
C	REVISED NOTE	2-1-00 NP
B	CHANGED REF. DIMS	1-18-99 df
A	CHANGED PART TO MATCH NEW FIT-TO	3-14-97

CUT LENGTH	TYP. WALL
+/- .065"	.065" +/- .005
REEL LENGTH	BOW TOLERANCE
	1/32" PER FOOT
DEPT. HEAD	ENGINEERING MANAGER
	DATE

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FILTRONA EXTRUSION

TACOMA PLANT
 5115 70th Ave. NW
 Steuben, Washington
 Phone: (206) 861-3000
 Fax: (206) 861-1000

7215

DATE 04/13/95

RPVC/FPVC

PART NAME THERMAL COVER

DOUG 8/26/02 AF