

**AAMA/WDMA/CSA 101/LS.2/A440-08
TEST REPORT**

Rendered to:

STARLIGHT SKYLIGHTS

SERIES/MODEL: SFA

PRODUCT TYPE: SELF-FLASHING ACRYLIC SKYLIGHT

Title	Summary of Results
Primary Product Designator	Class R-PG15 1349 x 2721 (53 x 107)-SKP
Design Pressure	± 720 Pa (± 15.04 psf)
Air Infiltration	0.8 L/s/m ² (0.15 cfm/ft ²)
Water Penetration Resistance Test Pressure	720 Pa (15.04 psf)
Uniform Load Structural Test Pressure	± 1440 Pa (± 30.08 psf)

Test Completion Date: 01/07/10

Reference must be made to Report No. 95611.01-109-44, dated 04/15/10 for complete test specimen description and data.

AAMA/WDMA/CSA 101/I.S.2/A440-08 TEST REPORT

Rendered to:

STARLIGHT SKYLIGHTS
304 Broad Street
Hurlock, Maryland 21643

Report No.: 95611.01-109-44
Test Dates: 11/10/09
Through: 01/07/10
Report Date: 04/15/10
Test Record Retention Date: 01/07/14

Project Summary: Architectural Testing, Inc. was contracted by Starlight Skylights to perform testing on a Series/Model SFA, self-flashing acrylic skylight. The sample tested successfully met the performance requirements for a Class R-PG15 1349 x 2721 (53 x 107)-SKP rating. Test specimen description and results are reported herein. The sample was provided by the client.

Test Specification: The test specimen was evaluated in accordance with AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*.

Test Specimen Description:

Series/Model: SFA

Product Type: Self-Flashing Acrylic Skylight

Overall Size: 1349 mm (53-1/8") wide by 2721 mm (107-1/8") high

Overall Area: 3.7 m² (39.5 ft²)

Finish: All members had a mill finish.

Frame Construction: The frame was constructed from thermally improved extruded aluminum with mitered and welded corners.

Test Specimen Description: (Continued)

Curb Construction: The curb was constructed from 0.042" thick roll-formed aluminum inner and outer skin with a 1" thick by 7-1/2' long piece of foam in between. The corners of the curb were welded. The interior corners were sealed with silicone.

Weatherstripping: No weatherstripping was utilized.

Glazing Details: The unit was glazed with one sheet of 3/16" thick clear acrylic outboard and one sheet of 1/8" thick clear acrylic inboard separated by a foam spacer. The unit was exterior glazed against a double-sided adhesive foam tape and secured with an extruded aluminum trim with double-sided adhesive foam tape against the acrylic. The aluminum trim was secured to the frame with #8 x 3/8" long hex head screws, located 2-1/2" from each corner and spaced 10" on center around the perimeter.

Drainage: No drainage was utilized.

Hardware: No hardware utilized.

Reinforcement: No reinforcement was utilized.

Installation: The skylight was set onto the curb and secured using 1/4" x 1-1/4" long hex head screws with a 5/8" diameter rubber backed washer, located 8-1/2" from each end and spaced 27-1/2" on center. The curb was set onto a Spruce-Pine-Fir wood buck, sealed with a bead of silicone and secured using 1/4" x 1-1/4" long hex head screws with a 5/8" diameter rubber backed washer, located 8-1/2" from each end and spaced 12" on center.

Test Results: The temperature during testing was 21°C (69°F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.2.1	Air Leakage Resistance per ASTM E 283 75 Pa (1.6 psf)	0.8 L/s/m ² (0.15 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.

Note #1: *The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

Test Results: (Continued)

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.3.2	Water Penetration Resistance per ASTM E 331		See Note #2

Note #2: *The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".*

5.3.4.2	Uniform Load Deflection per ASTM E 330 (Deflections were taken between installation fasteners) (Loads were held for 10 seconds)		
	720 Pa (15.04 psf) (positive)	0.3 mm (0.01")	See Note #3
	720 Pa (15.04 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 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 (Permanent sets were taken between installation fasteners) (Loads were held for 10 seconds)		
	1440 Pa (30.08 psf) (positive)	0.3 mm (0.01")	2.8 mm (0.11") max.
	1440 Pa (30.08 psf) (negative)	<0.3 mm (<0.01")	2.8 mm (0.11") max.

Optional Performance

4.3.2.1	Water Penetration Resistance per ASTM E 331 (without insect screen)		
	720 Pa (15.04 psf)	No leakage	No leakage

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>
Jeremy R. Bender	Architectural Testing, Inc.
Michael D. Stremmel, P.E.	Architectural Testing, Inc.
Ken R. Stough	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.

Jeremy R. Bender
Technician

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

KRS:dem

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: Photograph (1)
- Appendix-D: Drawings (4)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	04/15/10	N/A	Original report issue

Appendix A

Alteration Addendum

Alteration #1: Date-11/10/09
Cause for alteration - Failed water penetration testing
Remedial action taken - Sealed weepholes at corner with silicone sealant

Appendix B

Test Equipment

Instrument	Manufacturer	Asset #
Control Panel	Architectural Testing, Inc.	005406
Skylight Fixture	Architectural Testing, Inc.	N/A
Linear Transducer	Celesco	003625
Linear Transducer	Celesco	62261-1
Linear Transducer	Celesco	62261-2

Appendix C
Photographs

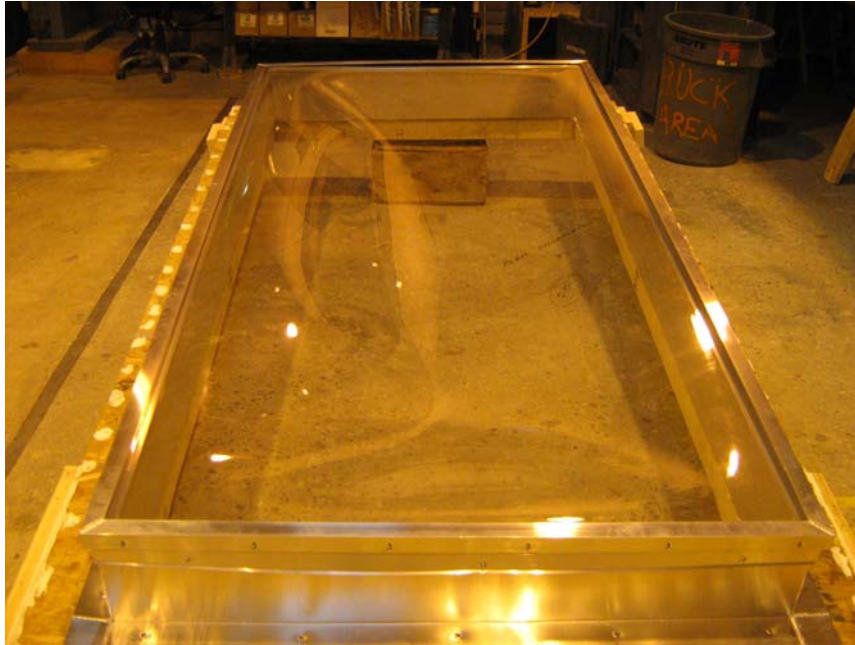


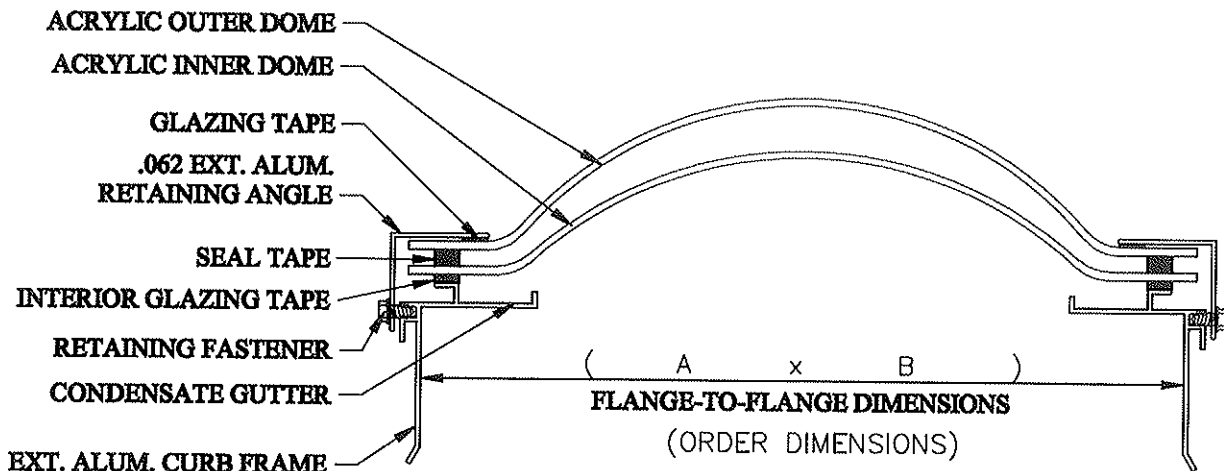
Photo No. 1
SFA Skylight



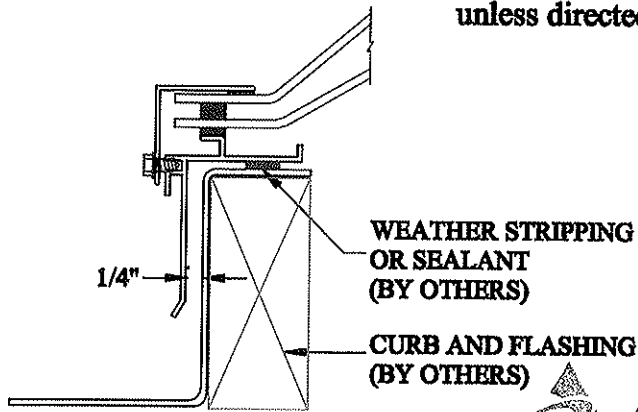
Photo No. 2
SFA Skylight

Appendix D

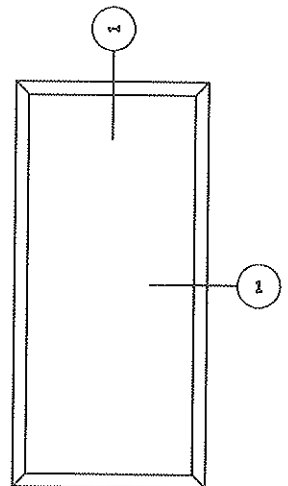
Drawings



NOTE:
 The flange-to-flange dimension is 1/2" larger than the outside dimension of curb, unless directed otherwise



1 **SILL DETAIL**
 Scale: NTS



PLAN VIEW

Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report # 95611-01
 Date 2/12/10 Tech SLB

CURB MOUNT-ACRYLIC - Specification:
 Curb Mount-Acrylic, as manufactured by **ORCA Manufacturing, Inc.**, with sealed insulated double acrylic domes (Clear over Clear standard, White or Bronze tints available as an option) in a welded extruded aluminum sash, with condensation drainage slots. Finish in bronze or mill, (or white gloss enamel as an option).

CMA			
Model	Dimensions	Glazing	Finish



TITLE:		CURB MOUNT-ACRYLIC	
Date:	January 14, 2010	Sheet:	ORCA Manufacturing, inc. P.O. Box 992 Hurlock, MD 21643 PHONE (800) 776-1539 FAX (410)943-8245 www.starlightskylights.com
Drawn By	AP		
Rev. By	CRH		
Engineer:	CRH		

DATE: _____

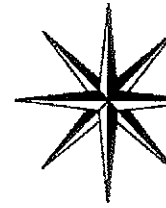
ORDER #: _____

PROJECT: _____

LOCATION: _____

CUSTOMER: _____

APPROVED: _____



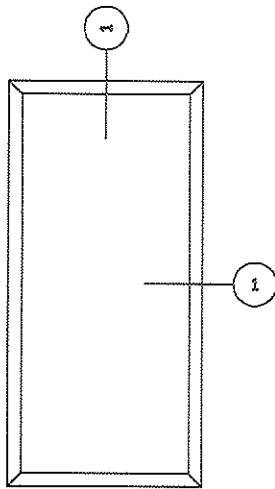
STARLIGHT SKYLIGHTS

PRODUCT OF ORCA MANUFACTURING, INC

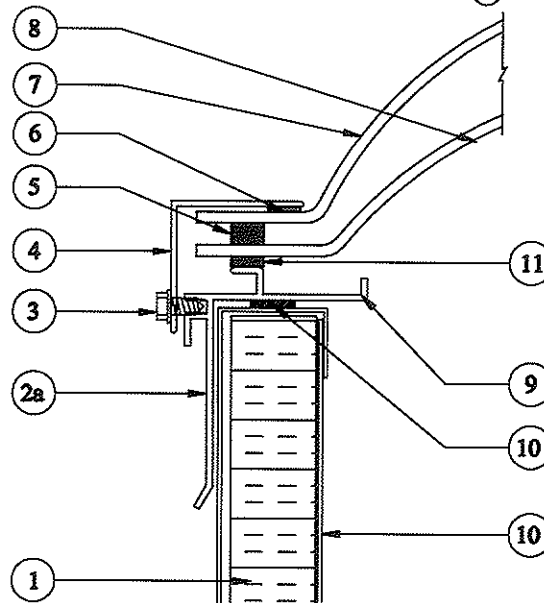
- ① 1" Rigid Insulation
- ②a Alum. Extruded Sash Non TB w/ weep holes
- ②b Alum. Extruded Sash TB w/o weep holes
- ③ S.S. Fastener
- ④ Alum. Extruded Retaining angle
- ⑤ Glazing tape spacer

- ⑥ Sealant tape
- ⑦ Outer Dome
- ⑧ Inner Dome
- ⑨ Condensation Gutter
- ⑩ Weather stripping tape
- ⑪ Glazing Tape (Typ.)
- ⑫ Aluminium skin

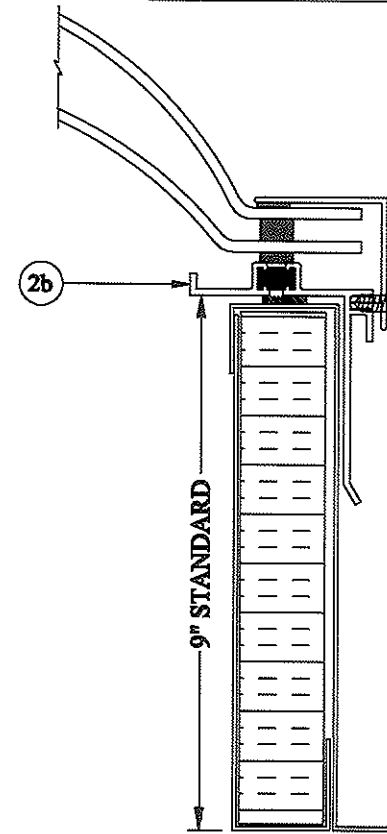
ORCA Manufacturing, Inc.
 P.O. Box 992
 Hurlock, MD 21643
 PHONE (800) 776-1539
 FAX (410)943-8245
 www.starlightskylights.com



PLAN VIEW



① **SILL DETAIL**
Standard NTB



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 95611.01

Date 2/12/10 Tech JFB

ROUGH OPENING DIMENSIONS

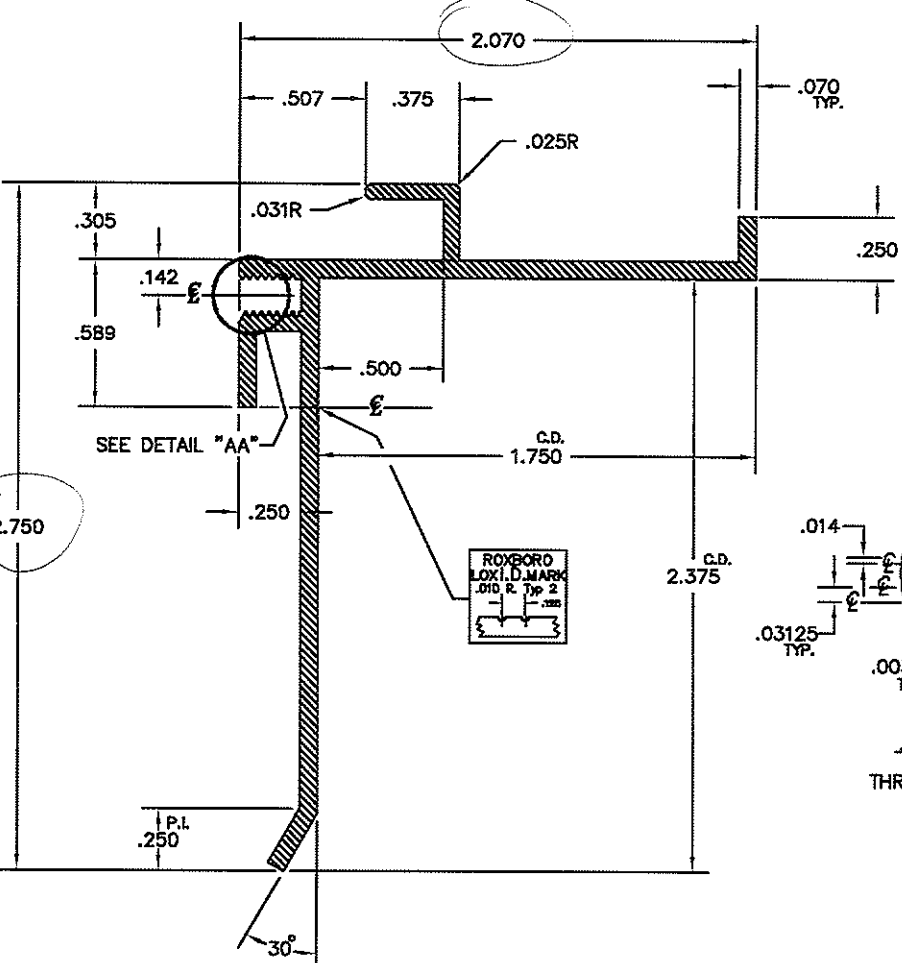
PAYMENT CODE: 88

SECTION

PRESS - 3/6	PRESS - 5	PRESS - 7		PRESS <u>3/6</u> USE	PRESS _____ USE	CUSTOMER ORCA MANUFACTURING	16772
6x25 1 144	7x25 1 196	7x25 1 227	8x28	BK: <u>R-BK-16772</u>	BK: _____		
6x23	7x23			BOL: <u>C003</u>	BOL: _____	CUSTOMER PART NO.	
6x21	7x21	7x23		PRESS _____ USE	PRESS _____ USE	THIS IS NOT A LOXCREEN DESIGN. IT IS LOXCREEN'S INTERPRETATION OF THE SECTION DESIGNED AND REQUESTED BY ITS CUSTOMER. CUSTOMER SHOULD THOROUGHLY CHECK THE DRAWING AND TEST DESIGN BEFORE USING AS LOXCREEN ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE PERFORMANCE OF PRODUCTS PRODUCED THEREFROM. LOXCREEN MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WITH REGARD TO EXTRUSIONS PRODUCED PURSUANT TO THIS DRAWING. LOXCREEN'S ONLY WARRANTY SHALL BE AS STATED ON LOXCREEN'S TERMS & CONDITIONS.	
6x19	7x19	7x21		BK: _____	BK: _____		
6x17	7x17	7x19		BOL: _____	BOL: _____		

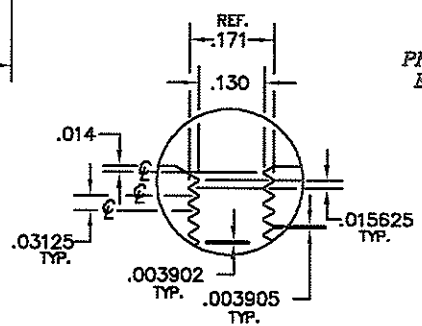
ALUMINUM ASSOCIATION STANDARD TOLERANCES FOR EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE.

AC: 00019214

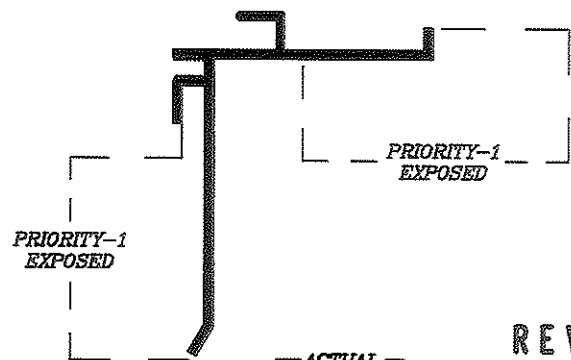


Test sample complies with these details.
Deviations are noted.

Report # 95611-01
Date 2/12/10 Tech JB



DETAIL "AA"
SCALE: 4 : 1
THREAD DETAIL FOR #8-32UNC



REVISED
JAN 15 2001
DESTROY PREVIOUS
PRODUCTION COPY

ACTUAL SIZE

TYPES OF FINISHES: SEE ORDER FOR FINISH CODE
UNSPECIFIED WALL THICKNESS: .070
UNSPECIFIED CORNER RADIUS: .012

SOURCE: PRINT	THEMAL CAVITY: NONE
DESCRIPTION: SKYLIGHT FRAME	
SOLID <input checked="" type="checkbox"/>	SEMI-HOLLOW <input type="checkbox"/>
AREA: .400	FACTOR: 25
WEIGHT: .480	ALLOY: 6063
PERIM: 12.03	TEMPER: T-5
D/S PERIM: _____	G.C.: 3°-4°

1/15/01		L.D. MARK CORRECTED	RF	PER ENG.
1/12/01		TOOLING ADDED	CEP	DIE-TECH
DATE	SYM	REVISIONS	BY	REMARKS

THE LOXCREEN COMPANY, INC.

GENERAL OFFICE
P. O. BOX 4004, WEST COLUMBIA, SC 29171-4004

SALES OFFICE: **ROXBORO BR. (04)** REF. # **20-1494**

DO NOT SCALE DRAWING

GRA-RE101300-01

THIS IS A COPY

REV. (1)

PRESS - 3/8		PRESS - 5		PRESS - 7		PRESS <u>3/8</u> USE		PRESS <u>5</u> USE		PAYMENT CODE:		SECTION <u>A013</u>		
6x25	2	158	7x25	4	108	7x29	4	125	8x25			CUSTOMER LOXTRIM PRODUCTION		
6x23			7x23			7x25						1912		
6x21			7x21			7x23						DIE NUMBER		
6x19			7x19			7x21			PRESS _____ USE	PRESS _____ USE	THIS IS NOT A LOXGREEN DESIGN. IT IS LOXGREEN'S INTERPRETATION OF THE SECTION DESIGNED AND REQUESTED BY ITS CUSTOMER. CUSTOMER SHOULD THOROUGHLY CHECK THE DRAWING AND TEST DESIGN BEFORE USING AS LOXGREEN ACCEPTS NO RESPONSIBILITY OR LIABILITY FOR THE PERFORMANCE OF PRODUCTS PRODUCED THEREFROM. LOXGREEN MAKES NO WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WITH REGARD TO EXTRUSIONS PRODUCED PURSUANT TO THIS DRAWING. LOXGREEN'S ONLY WARRANTY SHALL BE AS STATED ON LOXGREEN'S TERMS & CONDITIONS.			
6x17			7x17			7x19			BK: _____	BK: _____	CUSTOMER PART NO.		CITY & STATE	
									BOL: <u>RB-3054</u>	BOL: <u>HM-7B-4P-S</u>				

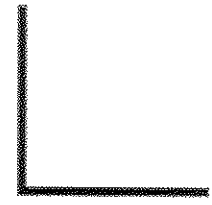
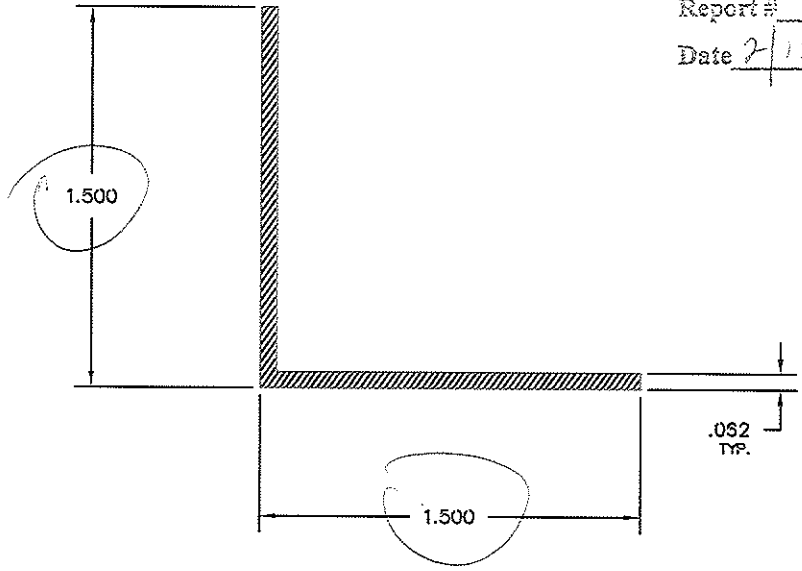
ALUMINUM ASSOCIATION STANDARD TOLERANCES FOR EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE.

AC: 00000101

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 95611.01
Date 2/12/10 Tech JEB



== ACTUAL ==
== SIZE ==

REVISED
APRIL 23 2008
DESTROY PREVIOUS
PRODUCTION COPY

TYPES OF FINISHES: _____

UNSPECIFIED WALL THICKNESS: .052

UNSPECIFIED CORNER RADIUS: .012

SOURCE: PRINT	THERMAL CAVITY:
DESCRIPTION: 1.5 x 1.5 x .052 ANGLE	
SOLID <input checked="" type="checkbox"/>	SEMI-HOLLOW <input type="checkbox"/>
AREA: .182	FACTOR: 28
WEIGHT: .218	ALLOY: 5053
PERIM: 5.00	TEMPER: T-5
O/S PERIM:	C.C.: 2"-3"

DATE: 8/04/89
SCALE: 2 : 1
DRAWN: RHF
CHECKED: JP

DATE	SYM	REVISIONS	BY	REMARKS
04/23/08		TOOLING CHANGE	ER	PER 52(RR)
3/14/05		PRESS 5 TOOLING CHANGED	BD	PER HAYTI
02/17/05		HAYTI TOOLING ADDED	SC	PER HAYTI
8/04/89		COMPUTER DRAWN	RF	PER ENG.
12/13/85		BACKER CHANGE	TCH	PER ENG.
7/31/78		REDRAWN & PRESS CHG. 2&3	TCH	PER ENG.
2/14/80		ORIGINAL	FB	PER ENG.

THE LOXCREEN COMPANY, INC.

GENERAL OFFICE
P. O. BOX 1004, WEST COLUMBIA, SC 29171-4004

SALES OFFICE: _____ REF. # N/A

ORA-

REV(C)
1B-4/10/08