

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

Rendered to:

STARLIGHT SKYLIGHTS

SERIES/MODEL: CMA

PRODUCT TYPE: Fixed Curb Mount 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	1.0 L/s/m ² (0.19 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: 12/03/09

Reference must be made to Report No. 95610.01-109-44, dated 02/11/10 for complete test specimen description and data.

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

Rendered to:

STARLIGHT SKYLIGHTS
304 Broad Street
Hurlock, Maryland 21643

Report No.: 95610.01-109-44
Test Dates: 11/10/09
Through: 12/03/09
Report Date: 02/11/10
Test Record Retention Date: 12/03/13

Project Summary: Architectural Testing, Inc. was contracted by Starlight Skylights to perform testing on a Series/Model CMA, fixed curb mount 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/LS.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*.

Test Specimen Description:

Series/Model: CMA

Product Type: Fixed Curb Mount Acrylic Skylight

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

Overall Area: 3.7 m² (39.5 ft²)

Finish: All aluminum members had a mill finish.

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

Weatherstripping: No weatherstripping was utilized.

Test Specimen Description: (Continued)

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 was utilized.

Reinforcement: No reinforcement was utilized.

Installation: The unit was installed into a Spruce-Pine-Fir wood buck. The frame was set against the wood curb and secured through the exterior leg of the frame members with 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 through all frame members into the wood curb. The frame was sealed to the wood curb with silicone.

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)	1.0 L/s/m ² (0.19 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.*

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)

<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 (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.

Ken R. Stough
Technician

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

KRS:dem/vlm

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: Photographs (2)
- Appendix-D: Drawings (5)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	02/11/10	N/A	Original report issue

Appendix A

Alteration Addendum

Alteration #1: Date - 11/10/09
Cause for alteration - failing 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
Linear Transducer	Celesco	Y002773
Linear Transducer	Celesco	Y002772
Linear Transducer	Celesco	62184

Appendix C

Photographs

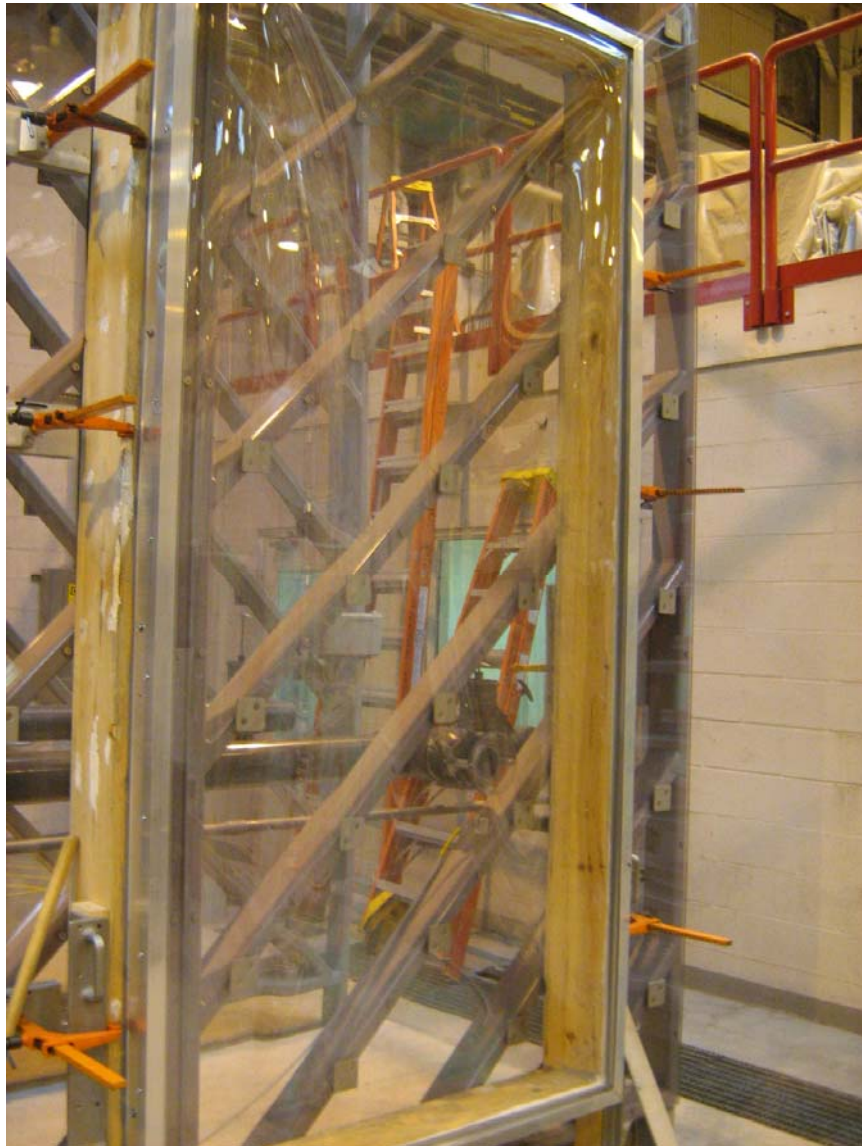


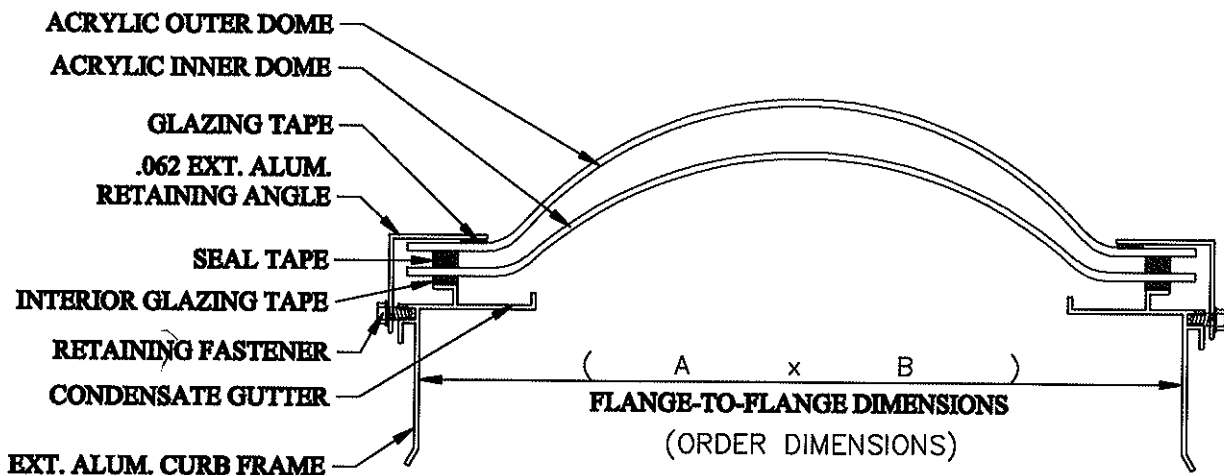
Photo No. 1
Fixed Curb Mount Acrylic Skylight



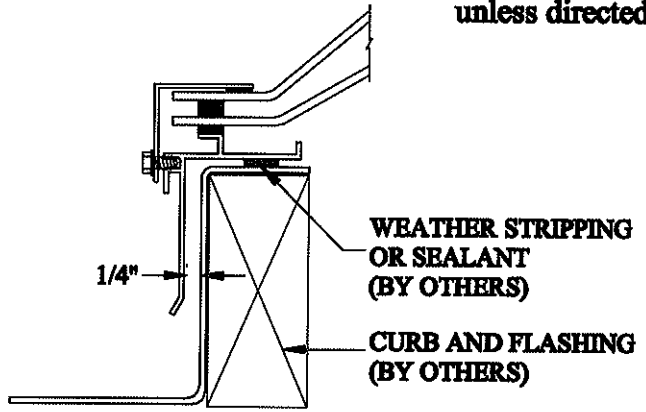
Photo No. 2
Fixed Curb Mount Acrylic Skylight During Structural Testing

Appendix D

Drawings

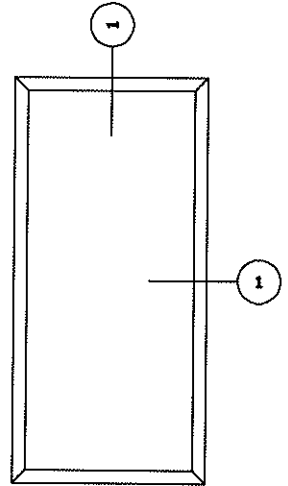


NOTE:
 The flange-to-flange dimension is 1/2" larger than the outside dimension of curb, unless directed otherwise



1 SILL DETAIL
 Scale: NTS

Architectural Testing
 Test sample complies with these details.
 Deviations are noted.
 Report # 95610.01-109
 Date 2/5/10 Tech KS



PLAN VIEW

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	
Drawn By	AP	Sheet
Rev. By	CRH	1 of 1
Engineer:	CRH	

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

DATE: _____

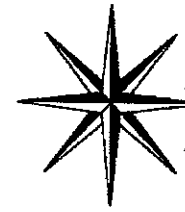
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PROJECT: _____

LOCATION: _____

CUSTOMER: _____

APPROVED: _____



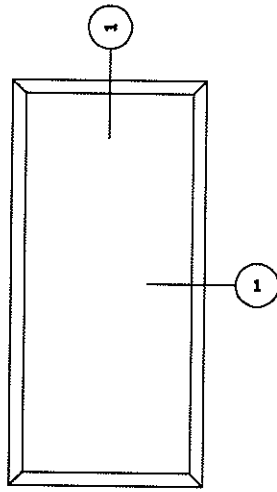
STARLIGHT SKYLIGHTS

PRODUCT OF ORCA MANUFACTURING, INC.

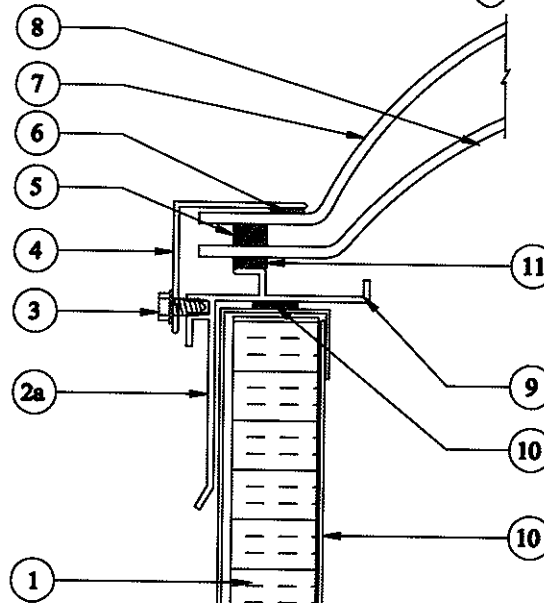
- ① 1" Rigid Insulation
- ②a Alum. Extruded Sash Non TB w/ weep holes
- ②b Alum. Extruded Sash TB w/o weep holes
- ③ S.S. Fastener
- ④ Alum. Extruded Retaining angle
- ⑤ Glazing tape spacer

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

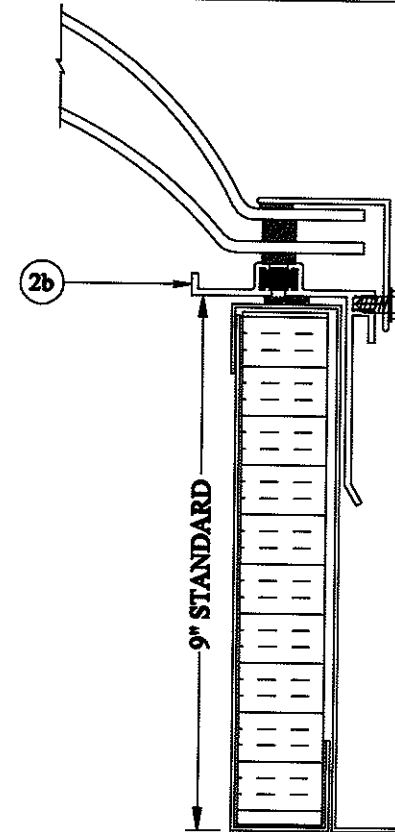
ORCA Manufacturing, Inc.
 P.O. Box 992
 Hurlock, MD 21643
 PHONE (800) 776-1539
 FAX (410)943-8245
 www.starlightskylights.com



PLAN VIEW



① **SILL DETAIL**
Scale: NTS



ROUGH OPENING DIMENSIONS



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 95610-01-109-44

Date 2/5/10 Tech KS

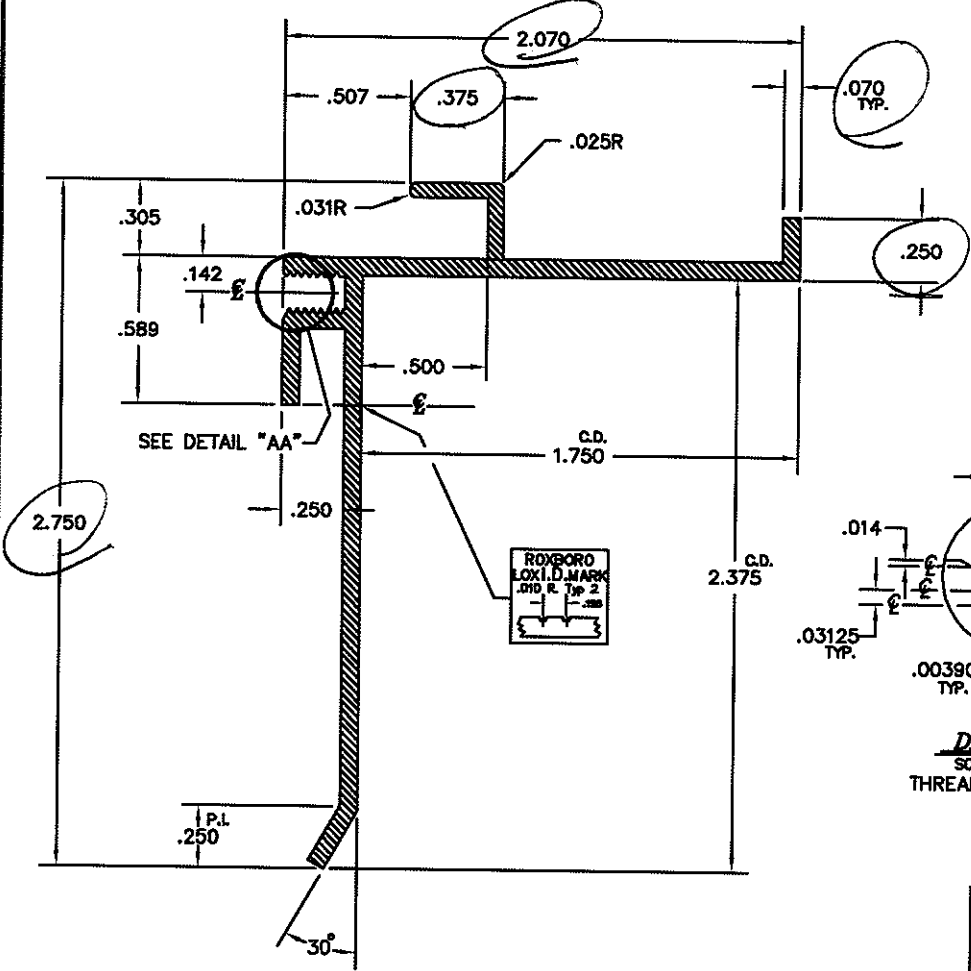
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6x23		7x23		7x25					BOL: C003	BK: _____	
6x21		7x21		7x23						BOL: _____	
6x19		7x19		7x21					PRESS _____ USE	PRESS _____ USE	
6x17		7x17		7x19					BK: _____	BK: _____	
									BOL: _____	BOL: _____	

PAYMENT CODE: 88 SECTION: 16772
 CUSTOMER ORCA MANUFACTURING
 CITY & STATE CORDOVA, MD
 DIE NUMBER

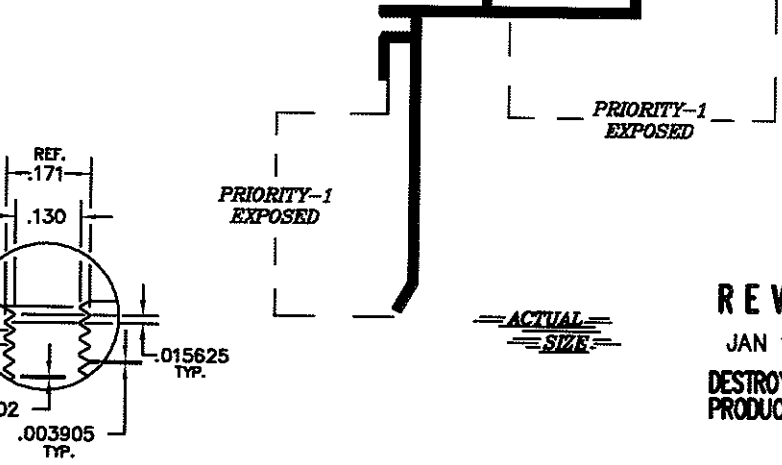
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 Test sample complies with these details.
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 Report # 95610.01-109-44
 Date 2/5/10 Tech KS



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

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

SOURCE: PRINT	THERMAL 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"
DATE: 10/18/2005	SCALE: 2:1
DRAWN: CEP	CHECKED:

1/15/01		I.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

ORA-RE101300-01

THIS IS A COPY

REV. (1)

PRESS - 3/8			PRESS - 5			PRESS - 7			PRESS 3/8 USE			PRESS 5 USE		
6x25	2	158	7x25	4	108	7x29	4	125	8x29			BK: R-BK-1912	BK: HM-BK-1912	
6x23			7x23			7x25						BOL: RB-3064	BOL: HM-7B-4P-9	
6x21			7x21			7x23						PRESS _____ USE	PRESS _____ USE	
6x19			7x19			7x21						BK: _____	BK: _____	
6x17			7x17			7x18						BOL: _____	BOL: _____	

PAYMENT CODE: _____

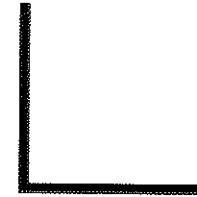
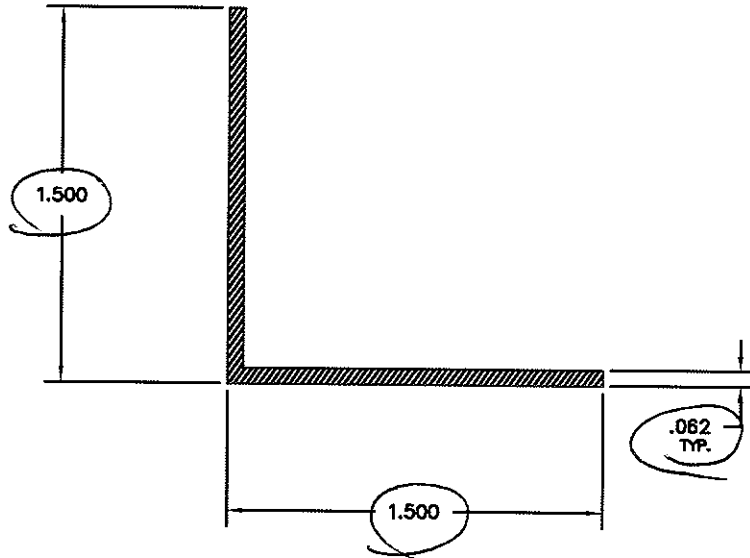
SECTION A013

CUSTOMER LOXTRIM PRODUCTION		1912
CUSTOMER PART NO.	CITY & STATE	DIE NUMBER

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AC: 00000101



~~ACTUAL~~
~~SIZE~~

REVISED
APRIL 23 2008
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PRODUCTION COPY

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 95610.01-109-44
Date 2/5/10 Tech ICS

TYPES OF FINISHES: _____
UNSPECIFIED WALL THICKNESS: .062
UNSPECIFIED CORNER RADII: .012

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DESCRIPTION: 1.5 x 1.5 x .062 ANGLE	
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AREA: .182	FACTOR: 28
WEIGHT: .218	ALLOY: 6063
PERIM: 6.00	TEMPER: T-5
O/S PERIM:	G.C.: 2"-3"
DATE: 8/04/89	SCALE: 2 : 1
DRAWN: RHF	CHECKED: JP

DATE	SYM	REVISIONS	BY	REMARKS
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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.
12/13/83		BACKER CHANGE	TCH	PER ENG.
7/31/78		REDRAWN & PRESS CHG. 2&3	TCH	PER ENG.
2/14/88		ORIGINAL	FB	PER ENG.

THE LOXGREEN COMPANY, INC.

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

SALES OFFICE: _____ REF. # N/A

QRA-

REV(C)
TB-4/10/86

PAYMENT CODE: 88

SECTION

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6x21	1	7x21	7x21	1	7x23					
6x19	1	7x19	7x19	1	7x21					
6x17	1	7x17	7x17	1	7x19					
BK: _____ USE									BK: _____ USE	
BOL: _____									BOL: _____	
PRESS 7 USE									PRESS _____ USE	
BK: HM-BK-14957									BK: _____	
BOL: 97072PB1									BOL: _____	

CUSTOMER ORCA MANUFACTURING

14957

CUSTOMER PART NO. CITY & STATE CORDOVA, MD

DIE NUMBER

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AC: 00019214

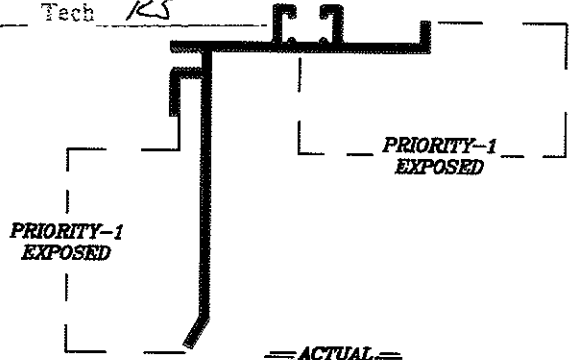
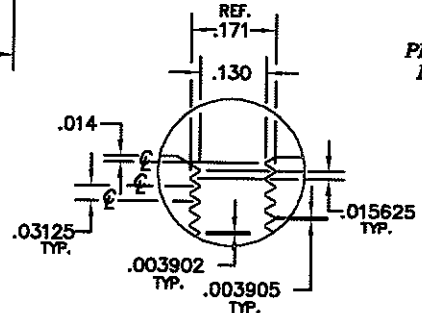
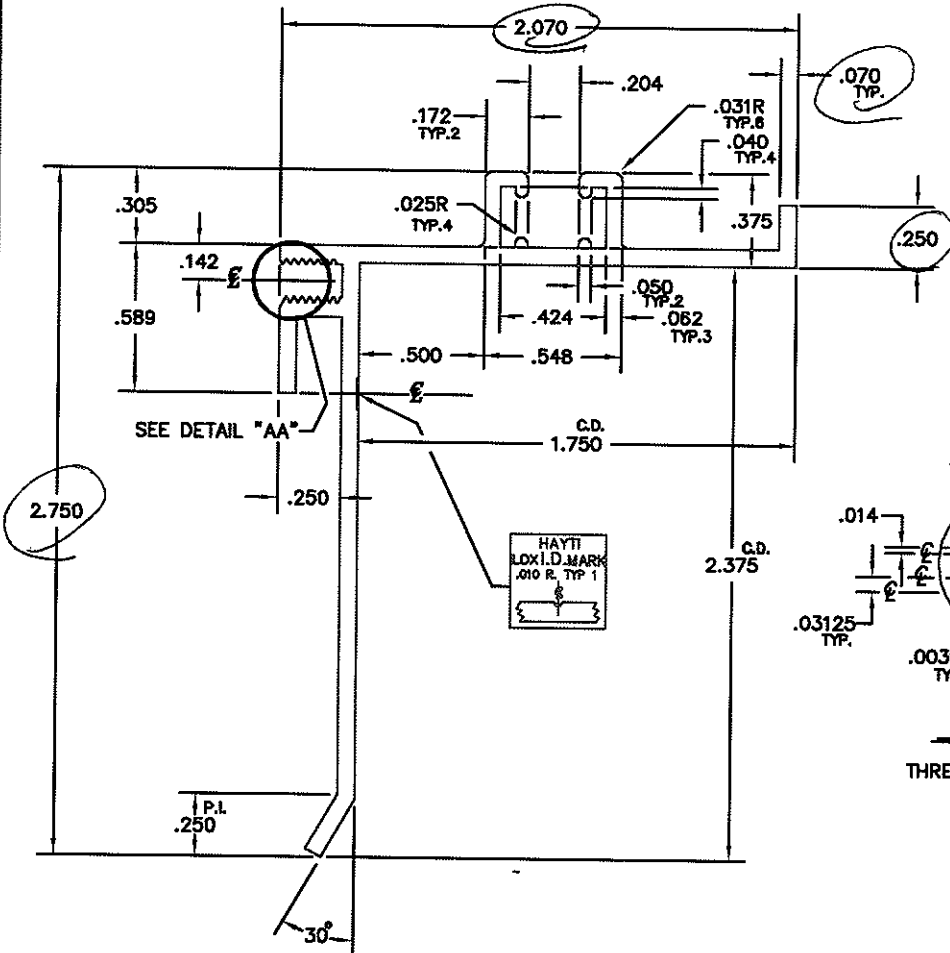


Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report # 95610. 01-109-44

Date 2/5/10 Tech KS



REVISED
SEPT 29 2005
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TYPES OF FINISHES: SEE ORDER FOR FINISH CODE
UNSPECIFIED WALL THICKNESS: .070
UNSPECIFIED CORNER RADII: .012

SOURCE: PRINT	THEMAL CAVITY: AA
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SOLID <input checked="" type="checkbox"/>	SEMI-HOLLOW <input type="checkbox"/>
AREA: .420	FACTOR: 25
WEIGHT: .504	ALLOY: 6063
PERIM: 12.85	TEMPER: T-5
O/S PERIM:	C.C.: 2" - 3"
DATE: 3/18/98	SCALE: 2:1
DATE: 3/28/98	DRAWN: RBP
DATE: 3/30/98	CHECKED: JP

9/28/05	CHANGED TO 1 HOLE	BD	PER 55
3/30/98	TOOLING ADDED	CEP	DIE-TECH
3/28/98	MAJOR REVISION	CEP	PER CUST.
DATE	SYM	REVISIONS	BY
			REMARKS

THE LOXREEN COMPANY, INC.

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QRA- 38929

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TB-4/10/98