

OSHA FALLS PROTECTION TEST REPORT

Rendered to:

STARLIGHT SKYLIGHTS

SERIES/MODEL: CMA

PRODUCT TYPE: Fixed Curb Mount Acrylic Skylight

Report No: 95610.02-109-44
Test Date: 01/06/10
Report Date: 02/22/10
Expiration Date: 01/06/14

OSHA FALLS PROTECTION TEST REPORT

Rendered to:

STARLIGHT SKYLIGHTS
304 Broad Street
Hurlock, Maryland 21643

Report No.: 95610.02-109-44
Test Date: 01/06/10
Report Date: 02/22/10
Expiration Date: 01/06/14

Project Summary: Architectural Testing, Inc. was contracted by Starlight Skylights to perform testing on one Series/Model CMA, fixed curb mount acrylic skylight. The test specimen description and results are reported herein. The test sample was provided by the client.

Test Specification: The test specimen was 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 and then dropped from varying heights above each skylight starting at 2' until permanent visible damage was noted. The highest impact load resulting in damage was recorded.

Test Specimen Description:

Series/Model: CMA

Product Type: Fixed Curb Mount Acrylic Skylight

Overall Size: 53-1/8" wide by 107-1/8" long

Overall Area: 39.5 ft²

Finish: All aluminum members had a mill finish.

Weatherstripping: No weatherstripping was utilized.

Test Specimen Description: (Continued)

Glazing Detail: The unit was glazed with one sheet of 3/16" thick clear acrylic outboard and one sheet of 16 mm multi-wall polycarbonate panel 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.

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

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 results are tabulated as follows:

OSHA Safety Test

<u>Test Method</u>	<u>Load Location</u>	<u>Results</u>
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, there was no visible damage to either skylight.

OSHA Safety Drop Test

<u>Test Method</u>	<u>Load Location</u>	<u>Results</u>
400 lbf-ft (2' drop height)	Center of dome	No visible damage
800 lbf-ft (4' drop height)	Center of dome	No visible damage
1200 lbf-ft (6' drop height)	Center of dome	No visible damage
1600 lbf-ft (8' drop height)	Center of dome	See Note #1

Note #1: At the 8' drop height, the exterior 3/16" clear acrylic dome broke and the interior multi-wall polycarbonate panel deglazed allowing the bag to penetrate the skylight.

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. 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:vlm

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

Appendix-A: Photographs (1)

Appendix-B: Drawings (5)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	02/22/10	N/A	Original report issue

Appendix B

Photographs



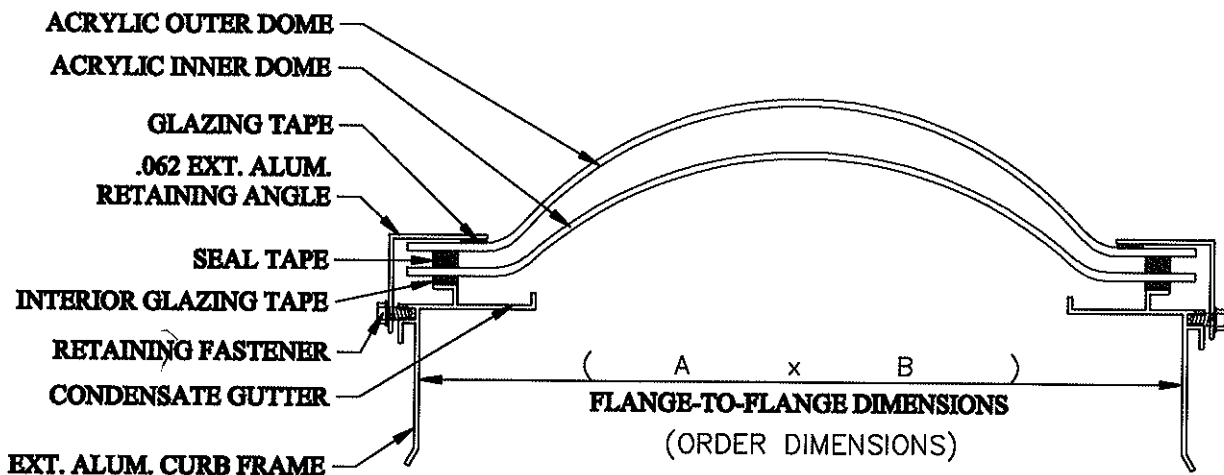
Photo No. 1
Curb Mount Skylight



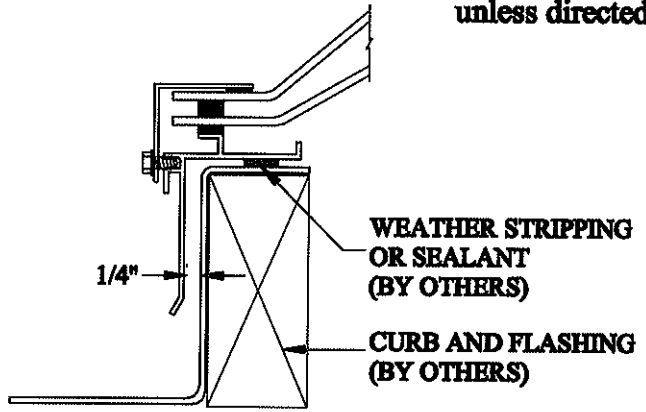
Photo No. 2
Curb Mount Skylight Failure

Appendix C

Drawings

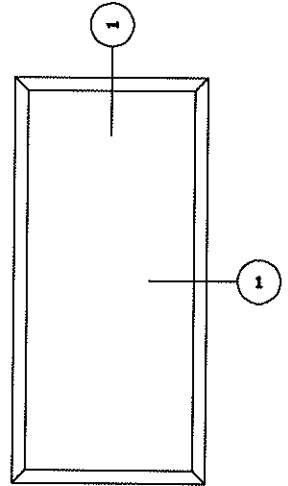


NOTE:
 The flange-to-flange dimension is 1/2" larger than the outside dimension of curb, unless directed otherwise



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: _____

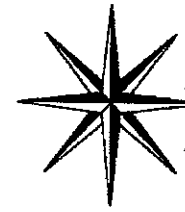
ORDER #: _____

PROJECT: _____

LOCATION: _____

CUSTOMER: _____

APPROVED: _____



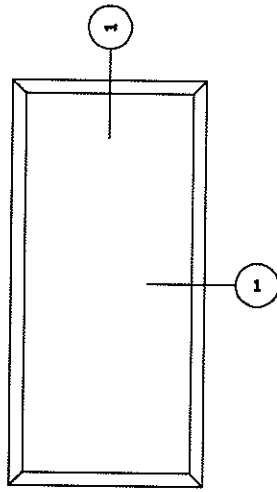
STARLIGHT SKYLIGHTS

PRODUCT OF ORCA MANUFACTURING, INC.

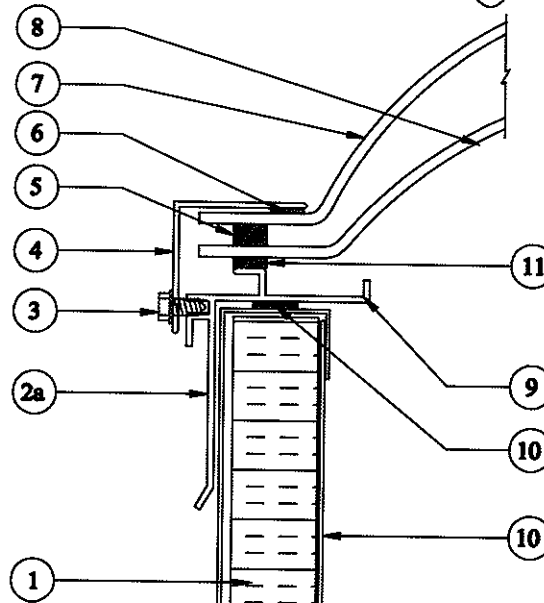
- ① 1" Rigid Insulation
- ②a Alum. Extruded Sash Non TB w/ weep holes
- ②b Alum. Extruded Sash TB w/o weep holes
- ③ S.S. Fastener
- ④ Alum. Extruded Retaining angle
- ⑤ Glazing tape spacer

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

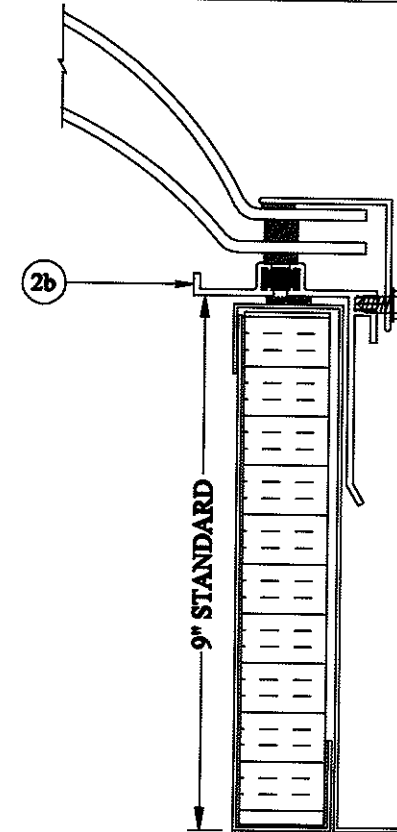
ORCA Manufacturing, Inc.
 P.O. Box 992
 Hurlock, MD 21643
 PHONE (800) 776-1539
 FAX (410)943-8245
 www.starlightskylights.com



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

PRESS - 3/8	PRESS - 5	PRESS - 7	PRESS 3/8 USE	PRESS _____ USE
6x25 1	7x25 1	7x29 1	BK: R-BK-16772	BK: _____
6x23	7x23	7x25	BOL: C003	BOL: _____
6x21	7x21	7x23	PRESS _____ USE	PRESS _____ USE
6x19	7x19	7x21	BK: _____	BK: _____
6x17	7x17	7x19	BOL: _____	BOL: _____

PAYMENT CODE: 88

SECTION: 16772

CUSTOMER: **ORCA MANUFACTURING**

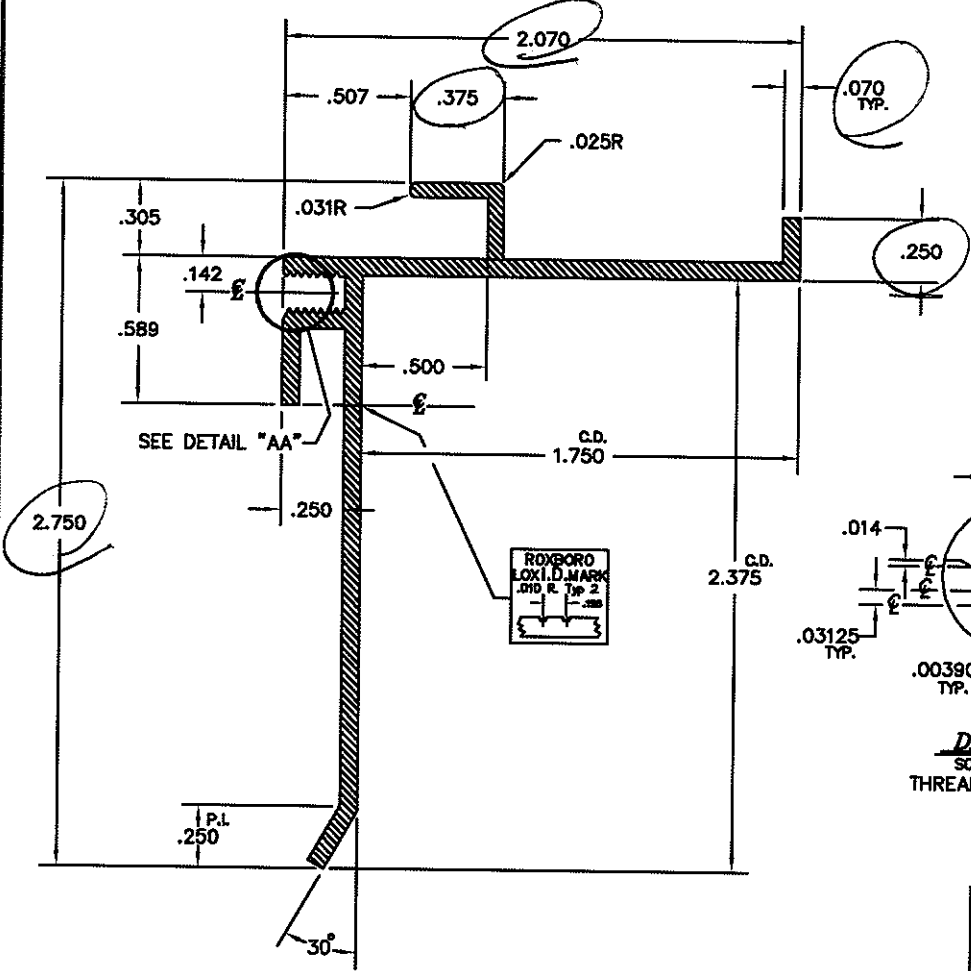
CITY & STATE: CORDOVA, MD

DIE NUMBER: _____

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

AC: 00019214

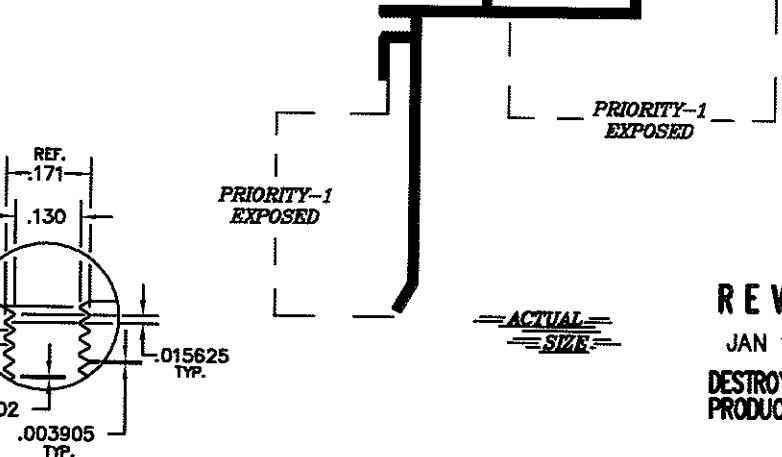


Architectural Testing

Test sample complies with these details.
Deviations are noted.

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

REVISED
JAN 15 2001
DESTROY PREVIOUS
PRODUCTION 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: _____

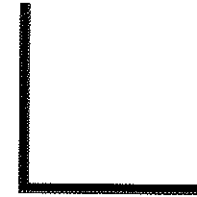
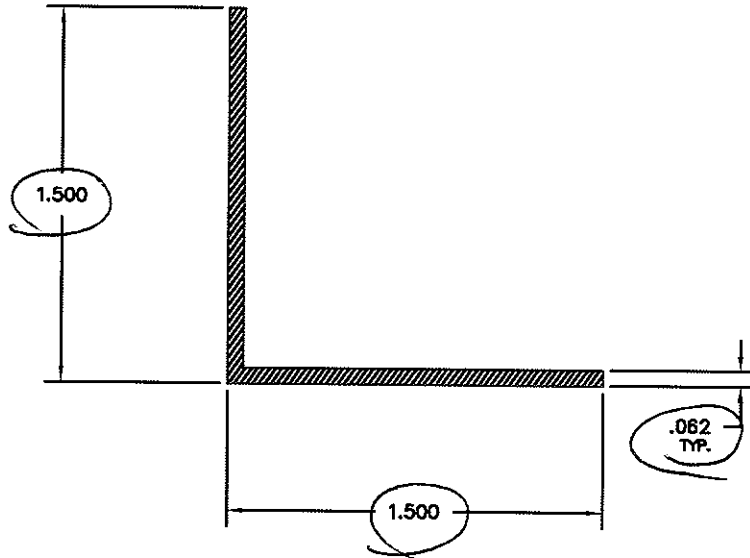
SECTION A013

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

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AC: 00000101



~~ACTUAL~~
~~SIZE~~

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APRIL 23 2008
DESTROY PREVIOUS
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

SOURCE: PRINT	HERMAL CAVITY:
DESCRIPTION: 1.5 x 1.5 x .062 ANGLE	
SOLID <input checked="" type="checkbox"/>	SEMI-HOLLOW <input type="checkbox"/>
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
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.
12/13/83		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

PRESS - 3/8			PRESS - 5			PRESS - 7			PRESS _____ USE	PRESS _____ USE
6x25	1	137	7x25	1	187	7x29	1	216	8x28	
6x23			7x23			7x25				
6x21			7x21			7x23				
6x19			7x19			7x21				
6x17			7x17			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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ALUMINUM ASSOCIATION STANDARD TOLERANCES FOR EXTRUDED SHAPES APPLY UNLESS SPECIFICALLY SHOWN OTHERWISE.

AC: 00019214

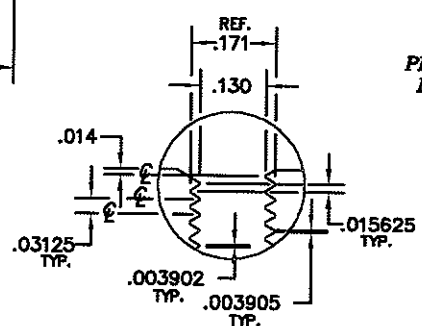
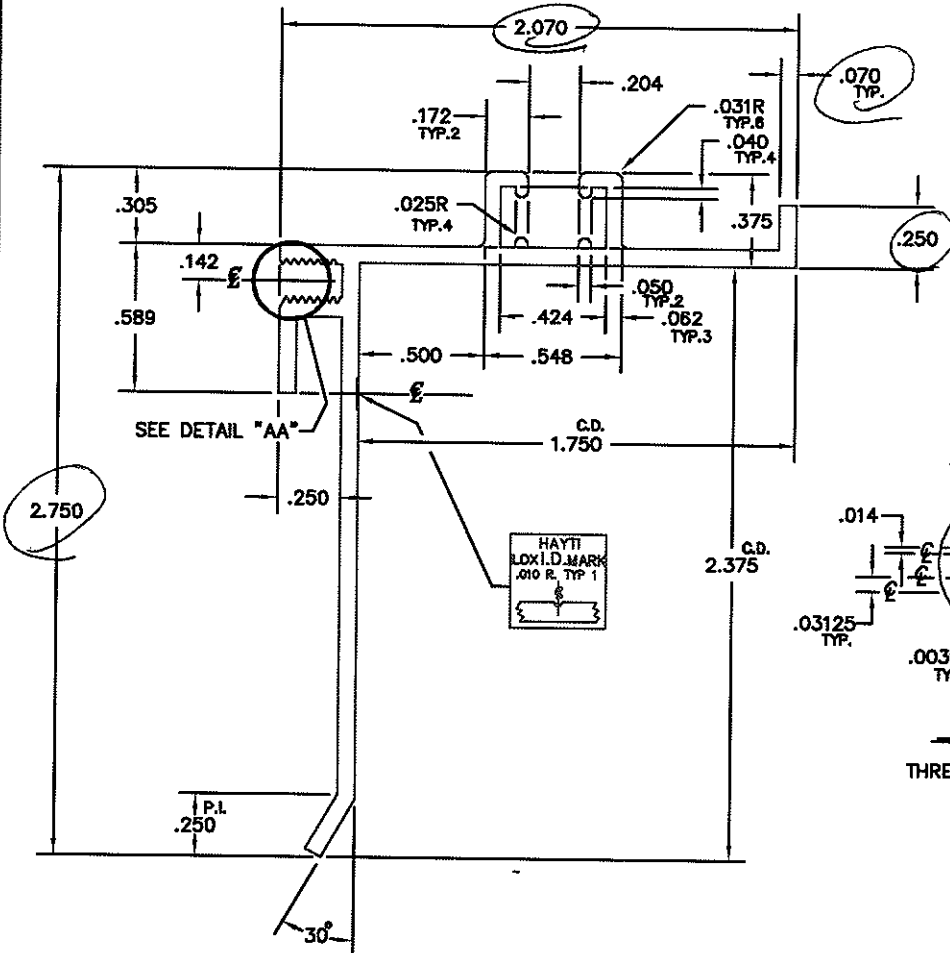


Architectural Testing

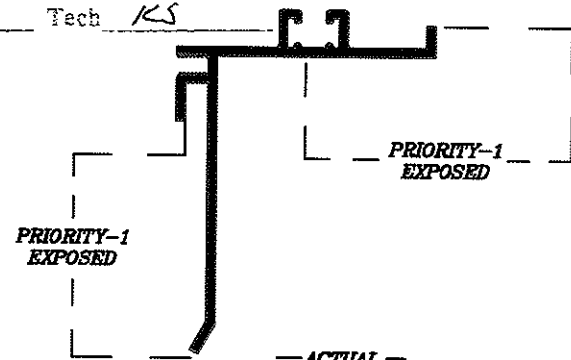
Test sample complies with these details.
Deviations are noted.

Report # 95610.01-109-44

Date 2/5/10 Tech KS



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



REVISSED
SEPT 29 2005
DESTROY PREVIOUS
PRODUCTION COPY

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

SOURCE: PRINT	THERMAL CAVITY: AA	
DESCRIPTION: SKYLIGHT FRAME		
SOLID <input checked="" type="checkbox"/>	SEMI-HOLLOW <input type="checkbox"/>	HOLLOW <input type="checkbox"/>
AREA: .420	FACTOR: 25	DATE: 3/18/98
WEIGHT: .504	ALLOY: 6063	SCALE: 2 : 1
PERIM: 12.65	TEMPER: T-5	DRAWN: RBP
O/S PERIM:	C.C.: 2" - 3"	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 LOXGREEN COMPANY, INC.

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

SALES OFFICE:
ROXBORO BR. (04) REF. # 98-0288

QRA- 38929

REV(1)
TB-4/10/98