Architectural Testing

NFRC U-FACTOR, SHGC, VT, & CONDENSATION RESISTANCE COMPUTER SIMULATION REPORT

Rendered to:
TUBELITE, INC.

SERIES/MODEL:
T-14000 Flush Glaze Series Storefront

Report Number: **B6911.04-116-45**
Report Date: **05/29/13**

130 Derry Court
York, PA 17406-8405
phone: 717-764-7700
fax: 717-764-4129
www.archtest.com

Architectural Testing

NFRC U-FACTOR, SHGC, VT, & CONDENSATION RESISTANCE
COMPUTER SIMULATION REPORT

Rendered to:
TUBELITE, INC.
4878 Mackinaw Trail
Reed City, Michigan 49677

Report Number:	B6911.04-116-45
Simulation Date:	05/29/13
Report Date:	05/29/13

Project Summary:

Architectural Testing, Inc. was contracted to perform U-Factor, Solar Heat Gain Coefficient, Visible Transmittance, and Condensation Resistance* computer simulations in accordance with the National Fenestration Rating Council (NFRC). The products were evaluated in full compliance with NFRC requirements to the standards listed below.

**NFRC's Condensation Resistance rating is NOT equivalent to a Condensation Resistance Factor (CRF) determined in accordance with AAMA 1503.*

Standards:

NFRC 100-2010:	*Procedure for Determining Fenestration Product U-Factors*
NFRC 200-2010:	*Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*
NFRC 500-2010:	*Procedure for Determining Fenestration Product Condensation Resistance Values*

Software:

Frame and Edge Modeling:	THERM 6.3.46
Center-of-Glass Modeling:	WINDOW 6.3.74
Total Product Calculations:	WINDOW 6.3.74
Spectral Data Library:	IGDB 29.0

Simulations Specimen Description:

Series/Model:	T-14000 Flush Glaze Series Storefront
Type:	Glazed Wall System, Window Wall
Frame Material:	AP Aluminum w/ Thermal Breaks - Partial
Sash Material:	NA Not Applicable
Standard Size:	2000mm x 2000mm

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Modeling Assumptions/Technical Interpretations:

1) To prevent air infiltration, tape was applied to all interior sash crack locations.
2) This product is available in either a painted or anodized finish. These two finish types were grouped for simulation purposes in accordance with NFRC 100-2010, Section 5.9.5.2.A.iii.2 and Table 5-5. The painted finish was simulated since it is the worst case (highest emissivity).
3) The center-line modeling approach was conducted using the horizontal intermediate for the head and sill models, and the vertical intermediate for the jambs. This procedure is outline in the NFRC Simulation Manual Section 8.10.

Specialty Products Table:

The specialty products method allow the manufacturer to determine the overall product SHGC and VT for any glazing option. The center of glass SHGC and/or VT must be determined using WINDOW 6.3.74. The method gives overall product SHGC and VT indexed on center of glass properties. All values used in the calculations are truncated to six decimal place precision.

	No Dividers	Dividers < 1	Dividers > 1
SHGC0	0.008635	0.012050	0.015252
SHGC1	0.896158	0.795159	0.700478
VT0	0.000000	0.000000	0.000000
VT1	0.887523	0.783109	0.685227

SHGC = SHGC0 + SHGCc (SHGC1 - SHGC0)

VT = VT0 + VTc (VT1 - VT0)

Validation Matrix:

The following products are part of a validation matrix. Only one is required for validation testing.

Product Line	*Report Number*
None	-

Spacer Option Description

	Sealant		
Spacer Type	*Primary*	*Secondary*	*Code*
Aluminum Spacer	Butyl Rubber	Butyl Rubber	A1-D

Grid Option Description

Grid Size	*Grid Type*	*Grid Pattern*
None	-	-

Reinforcement Option Description

Location	*Material*
None	-

Gas Filling Technique Description

Fill Type	*Method*
84.48% Xenon	Single Probe Timed
76.14% Argon	Single Probe Timed
88.47% Argon	Single Probe Timed
78.56% Argon	Single Probe Timed
78.10% Krypton	Single Probe Timed
87.41% Argon	Single Probe Timed
64.98% Argon	Single Probe Timed
74.70% Argon	Single Probe Timed
60.78% Argon	Single Probe Timed
62.43% Argon	Single Probe Timed
86.02% Argon	Single Probe Timed
81.60% Xenon	Single Probe Timed
94.54% Xenon	Evacuated Chamber
76.90% Krypton	Single Probe Timed
71.54% Xenon	Single Probe Timed
76.45% Krypton	Single Probe Timed
66.67% Xenon	Single Probe Timed
82.16% Xenon	Single Probe Timed

Edge-of-Glass Construction

Interior Condition	EPDM Gasket Between Aluminum Frame and Glass
Exterior Condition	EPDM Gasket Between Aluminum Frame and Glass

Weatherstripping

Type	*Quantity*	*Location*
None	-	-

Frame/Sash Materials Finish

Interior	Painted Aluminum
Exterior	Painted Aluminum

NFRC 100/200/500 Summary Sheet
T-14000 Flush Glaze Series Storefront

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance	
1	COG=0.4400											
	0.222	0.500	0.225					XEN84		CL	A1-D	N
	U-Factor		0.53	SHGC (N)				0.62	VT (N)	0.65	CR	38
2	COG=0.4200											
	0.236	0.500	0.225					ARG76	0.654(#2)	RC	A1-D	N
	U-Factor		0.51	SHGC (N)				0.31	VT (N)	0.29	CR	38
3	COG=0.4000											
	0.223	0.500	0.225					ARG88	0.571(#2)	CL	A1-D	N
	U-Factor		0.49	SHGC (N)				0.22	VT (N)	0.15	CR	38
4	COG=0.3800											
	0.236	0.500	0.225					ARG79	0.465(#2)	RC	A1-D	N
	U-Factor		0.48	SHGC (N)				0.19	VT (N)	0.13	CR	38
5	COG=0.3600											
	0.221	0.500	0.225					KRY78	0.406(#2)	SR	A1-D	N
	U-Factor		0.46	SHGC (N)				0.19	VT (N)	0.16	CR	39
6	COG=0.3400											
	0.232	0.500	0.225					ARG87	0.318(#2)	CL	A1-D	N
	U-Factor		0.45	SHGC (N)				0.42	VT (N)	0.50	CR	39
7	COG=0.3200											
	0.223	0.500	0.225					ARG65	0.215(#2)	CL	A1-D	N
	U-Factor		0.43	SHGC (N)				0.56	VT (N)	0.65	CR	39
8	COG=0.3000											
	0.233	0.500	0.225					ARG75	0.166(#2)	CL	A1-D	N
	U-Factor		0.41	SHGC (N)				0.40	VT (N)	0.47	CR	39
9	COG=0.2800											
	0.223	0.500	0.225					ARG61	0.087(#2)	CL	A1-D	N
	U-Factor		0.40	SHGC (N)				0.49	VT (N)	0.67	CR	39
10	COG=0.2600											
	0.223	0.500	0.225					ARG62	0.035(#2)	CL	A1-D	N
	U-Factor		0.38	SHGC (N)				0.34	VT (N)	0.62	CR	39

NFRC 100/200/500 Summary Sheet
T-14000 Flush Glaze Series Storefront

ID	Pane Thickness 1	Gap Width 1	Pane Thickness 2	Gap Width 2	Pane Thickness 3	Gap Width 3	Pane Thickness 4	Gap Fill	Low-e (Surface#)	Tint	Spacer	Grid Type
	U-Factor			Solar Heat Gain Coefficient (SHGC) Grids (None / <1 / >=1)					Visible Transmittance (VT) Grids (None / <1 / >=1)		Condensation Resistance	
11	COG=0.2400											
	0.223	0.500	0.223					ARG86	0.035(#2) / 0.035(#3)	CL	A1-D	N
	U-Factor		**0.36**	**SHGC (N)**				**0.32**	**VT (N)**	**0.56**	**CR**	**39**
12	COG=0.2200											
	0.223	0.500	0.223					XEN82	0.018(#2) / 0.018(#3)	CL	A1-D	N
	U-Factor		**0.35**	**SHGC (N)**				**0.23**	**VT (N)**	**0.46**	**CR**	**39**
13	COG=0.2000											
	0.223	0.500	0.223					XEN95	0.018(#2) / 0.018(#3)	CL	A1-D	N
	U-Factor		**0.33**	**SHGC (N)**				**0.23**	**VT (N)**	**0.46**	**CR**	**39**
14	COG=0.1800											
	0.223	0.250	0.003	0.250	0.221			KRY77/AIR	0.018(#2) / 0.755(#3) / 0.122(#4) / 0.028(#5)	CL	A1-D	N
	U-Factor		**0.31**	**SHGC (N)**				**0.22**	**VT (N)**	**0.39**	**CR**	**40**
15	COG=0.1600											
	0.223	0.250	0.003	0.250	0.223			XEN72/AIR	0.018(#2) / 0.755(#3) / 0.122(#4) / 0.018(#5)	CL	A1-D	N
	U-Factor		**0.30**	**SHGC (N)**				**0.22**	**VT (N)**	**0.41**	**CR**	**40**
16	COG=0.1400											
	0.223	0.250	0.003	0.250	0.223			KRY76	0.018(#2) / 0.755(#3) / 0.122(#4) / 0.018(#5)	CL	A1-D	N
	U-Factor		**0.28**	**SHGC (N)**				**0.22**	**VT (N)**	**0.41**	**CR**	**40**
17	COG=0.1200											
	0.223	0.250	0.003	0.250	0.223			XEN67	0.018(#2) / 0.755(#3) / 0.122(#4) / 0.018(#5)	CL	A1-D	N
	U-Factor		**0.26**	**SHGC (N)**				**0.22**	**VT (N)**	**0.41**	**CR**	**40**
18	COG=0.1000											
	0.223	0.250	0.003	0.250	0.223			XEN82	0.018(#2) / 0.755(#3) / 0.122(#4) / 0.018(#5)	CL	A1-D	N
	U-Factor		**0.25**	**SHGC (N)**				**0.22**	**VT (N)**	**0.41**	**CR**	**40**

The Condensation Resistance results obtained from this procedure are for controlled laboratory conditions and do not include the effects of air movement through the specimen, solar radiation, and the thermal bridging that may occur due to the specific design and construction of the fenestration system opening.

Ratings values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values identified on a valid Certification Authorization Report (CAR) by an NFRC accredited Inspection Agency (IA) are to be used for labeling purposes. The ratings values were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy.

Architectural Testing, Inc. is an NFRC accredited simulation laboratory and all simulations were conducted in full compliance with NFRC approved procedures and specifications. The NFRC procedure requires that the computational results be verified through actual test results.

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period. The test record retention end date for this report is May 29, 2017.

Results obtained are simulated 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 product simulated. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

Kristen L. Livelsberger

Digitally Signed by: Kristen L. Livelsberger

Kristen L. Livelsberger
Senior Simulation Technician
NFRC Certified Simulator

REVIEWED BY:

Michael J. Thoman

Digitally Signed by: Michael J. Thoman

Michael J. Thoman
Director - Simulations and Thermal Testing
Simulator-In-Responsible-Charge

KLL:kll

B6911.04-116-45

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Drawings and Bills of Material (10)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
.04R0	05/29/13	All	Original Report Issued to Tubelite, Inc.

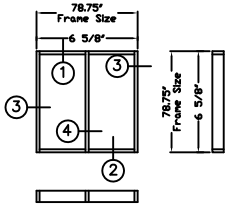
All drawings and Bills of Material used to simulate this product are enclosed in this Appendix

Appendix A

B6911.04-116-45

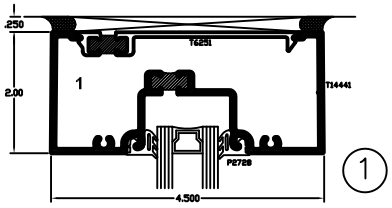
Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen L. Riedsberger



T-14000: Flush Glaze Series AAMA 507simulation with NFRC 100/200/500 report

T-14000 Flush glaze Series Mock Up
SCALE: 1/4" = 1'-0"



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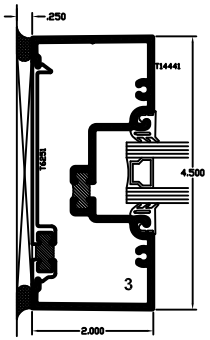

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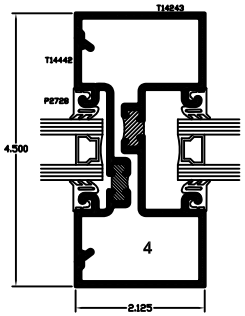

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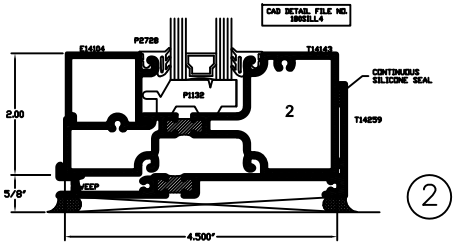


2

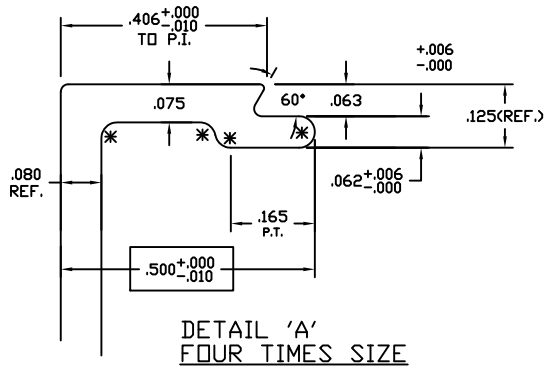
03/25/2013

TUBELITE

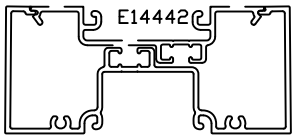
Architectural Testing

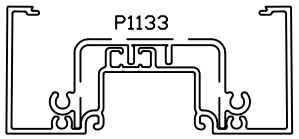
Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen K. Riedsteger

E14441

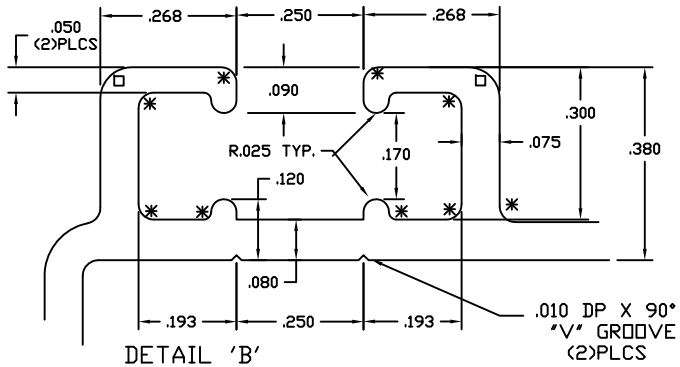


DETAIL 'A'
FOUR TIMES SIZE

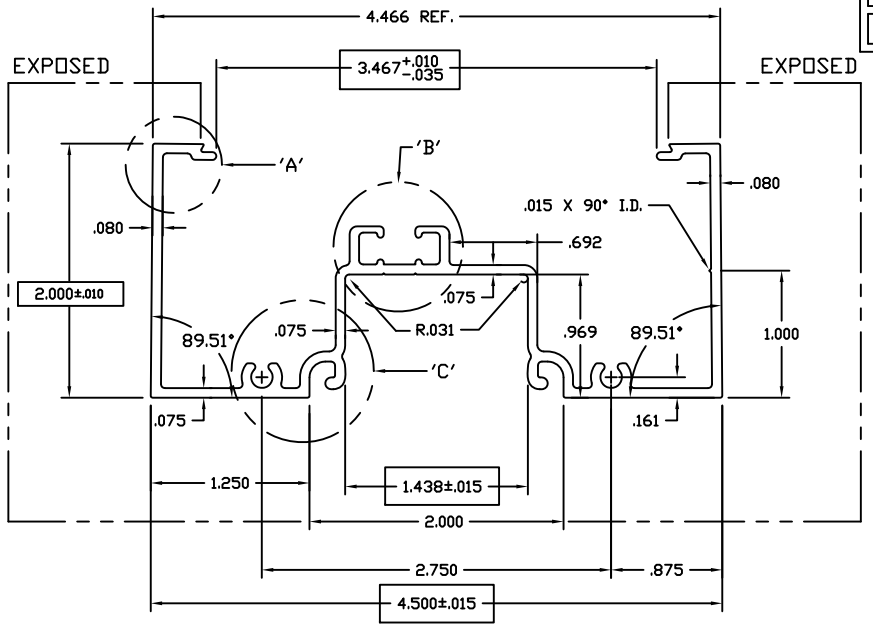




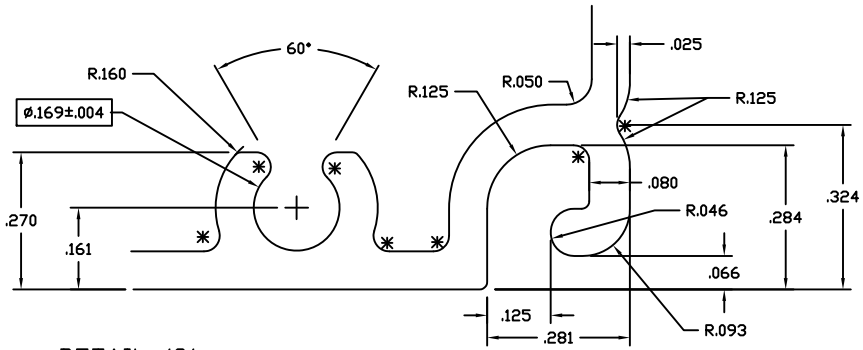
HALF SIZE ASSEMBLY



DETAIL 'B'
FOUR TIMES SIZE



ACTUAL SIZE



DETAIL 'C'
FOUR TIMES SIZE

MATES WITH E14442, E14445 AND P1133 CLIP
□ INDICATES .062 RADIUS
▭ INDICATES CRITICAL DIMENSION

LANCED AND FULLY DEBRIDGE

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED

ALL UNSPECIFIED CORNERS .015R

✱ INDICATES .031 RADIUS

TUBELITE DEPENDABLE

4878 MACKINAW TRAIL
REED CITY, MICHIGAN 49677

REV	DATE	DESCRIPTION	INTL

WALL THK.	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	54:1
PERIMETER OUT (TOTAL)	26.406			AREA	1.029	WGT/FT	1.210
FACTOR	22	CIRCLE SIZE	4.913			INFILL VOLUME	.164

RXX	1.583	SXX	1.136	IXX	2.579	CXX	2.271
RYY	.621	SYY	.315	IYY	.397	CYY	1.258

THERM. HEAD/JAMB/VERTICAL 2" X 4 1/2"
T14000 THERMAL STOREFRONT

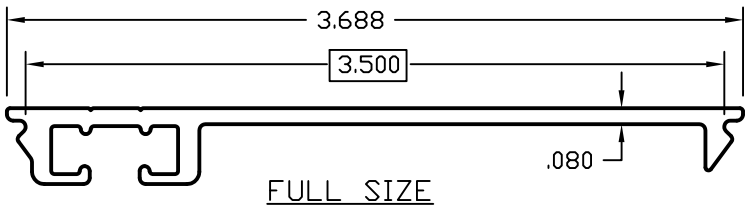
DRAWN BY	CRH	DRWG DATE	10/25/10	APPV'D BY	DATE APPV'D
DWG SCALE	NOTED	PRODUCT CODE	180	E14441	REV

MATERIAL: PAINTED or ANODIZED ALUMINUM

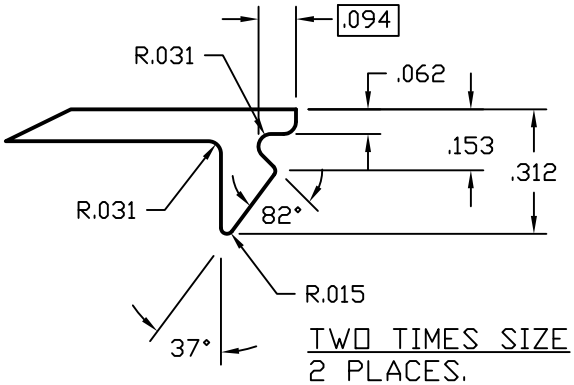
Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen L. Kriedsberger

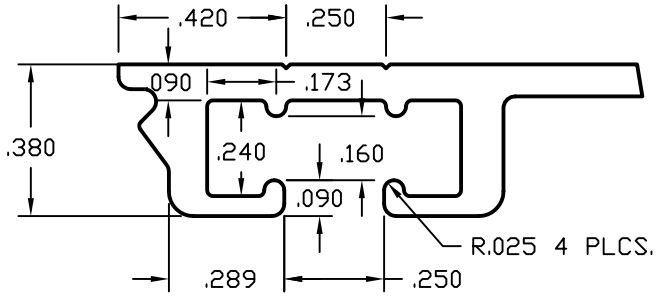
E6251 A



FULL SIZE



TWO TIMES SIZE
2 PLACES.



2 PLACES TYP.

TWO TIMES SIZE

MATERIAL: PAINTED or ANODIZED ALUMINUM

POURED AND DEBRIDGE - FULL
THERE ARE NO EXPOSED SURFACES

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED

ALL UNSPECIFIED RADII .015

✳ INDICATES .031 RADIUS

▭ DENOTES CRITICAL DIMENSION

ALL DIES PROPERTY OF TUBELITE

TUBELITE®
DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	~~02/18/08~~	~~RELEASED FOR TOOLING~~	NIK
	04-01-08	RELEASE FOR PRODUCTION	NIK
A	04-28-08	REMOVED AZOBRADED NOTE	NIK

WALL THK. .080	SECTION CLASS S	MAT'L 6063-T5	RATIO 134
PERIMETER OUT (TOTAL) 9.982		AREA .412	WGT/FT .484
FACTOR 21	CIRCLE SIZE 4.5		INFILL VOLUME .158

RXX 1.153	SXX .264	IXX .548	CXX 2.075
RYY .101	SYY .015	IYY .004	CYY .286

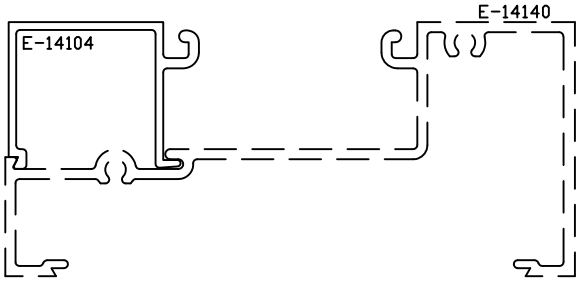
THERMALLY BROKEN FLAT CLOSER PLATE
THERMAL DOOR

DRAWN BY NIK	DRWG DATE 02/18/08	APPV'D BY	DATE APPV'D
DWG SCALE NOTED	PRODUCT CODE 111	E6251	REV A

Architectural Testing

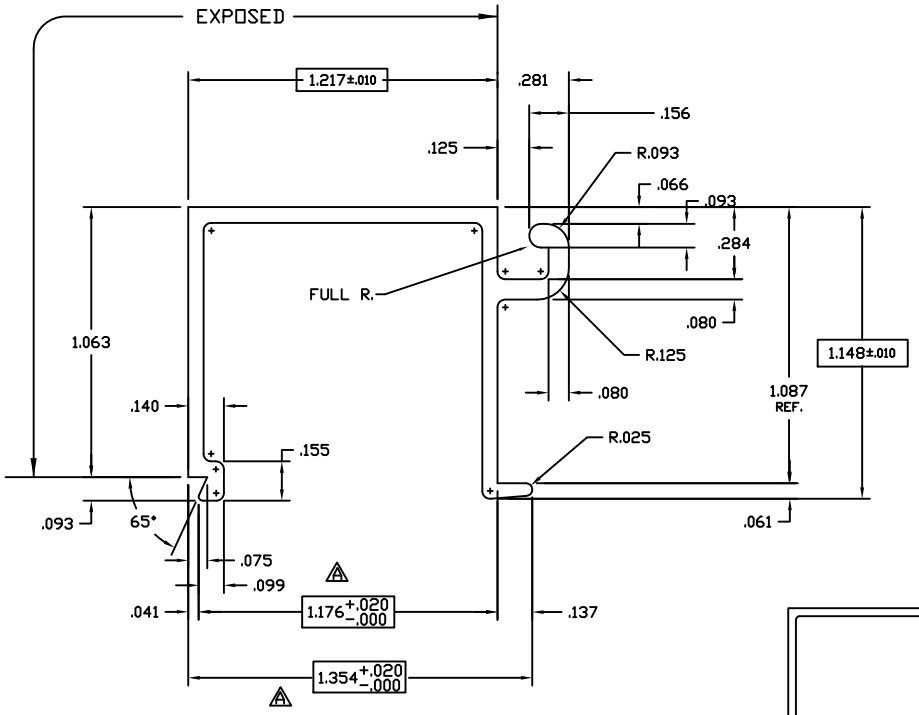
Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen A. Riedsberger

E14104 B

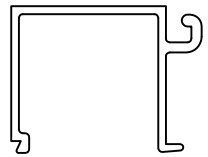


ASSEMBLY

NOTE : MATES WITH E-14140 AND E-14103



TWO TIMES SCALE



SCALE: FULL

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED

ALL UNSPECIFIED RADII .015

* INDICATES .031 RADIUS

☐ DENOTES CRITICAL DIMENSION

ALL DIES PROPERTY OF TUBELITE

TUBELITE® DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	4/1/93	RELEASE TO TOOLING	REV
	5/18/93	RELEASE TO PRODUCTION	KMH
	7/7/93	REVISE EXTR. # WAS E-14003	KMH
A	12/2/97	REVISE TOLERANCES	KMH
B	3/18/98	REV. & REL. TO PROD./TOL. CHANGE NOTED AS	SMF

WALL THK. .060	SECTION CLASS S	MAT'L 6063-T5	RATIO 70
PERIMETER OUT (TOTAL) 8.270		AREA .264	WGT/FT .310
FACTOR 27	CIRCLE SIZE 1.784		INFILL VOLUME N/A

RXX .550	SXX .106	IXX .080	CXX .757
RYY .374	SYY .049	IYY .037	CYY .749

GLASS STOP FOR 1" GLASS
E14000 NON THERMAL STOREFRONT

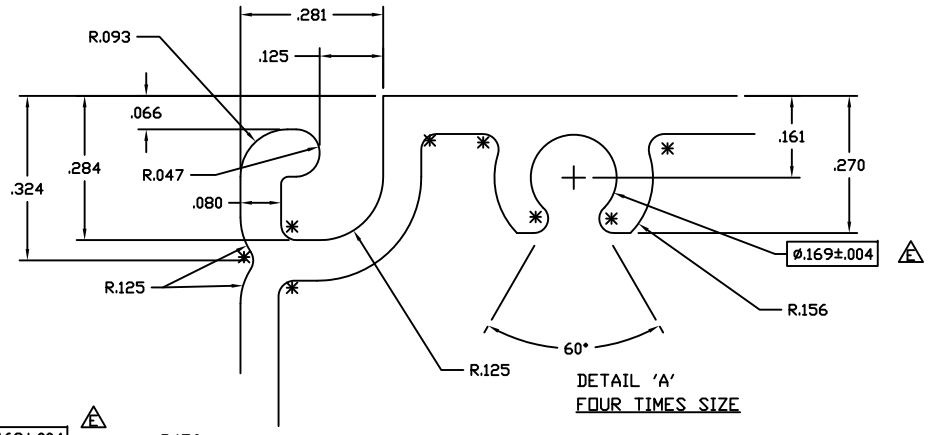
DRAWN BY KMH	DRVG DATE 03/11/93	APPV'D BY	DATE APPV'D	
DWG SCALE NOTED	PRODUCT CODE 190	E14104		REV B

MATERIAL: PAINTED or ANODIZED ALUMINUM

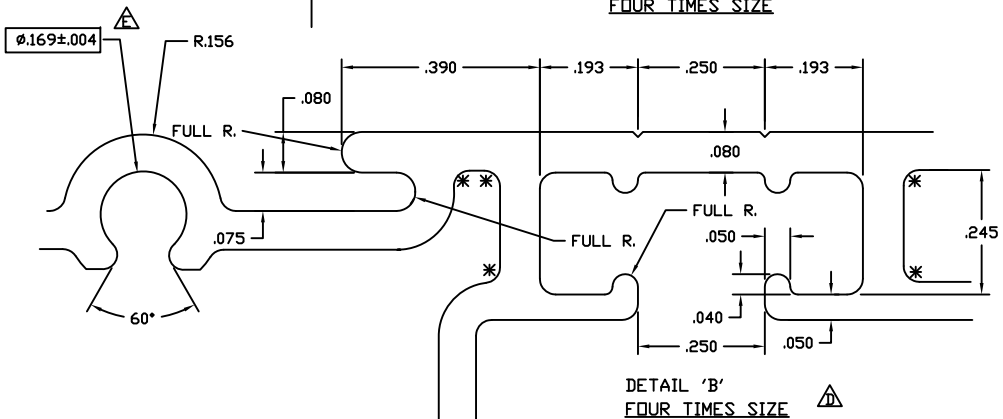
Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen K. Luedsburger

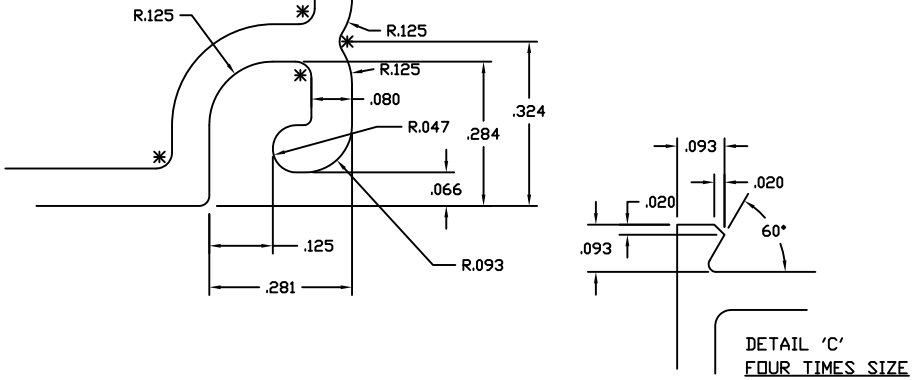
E14143 E



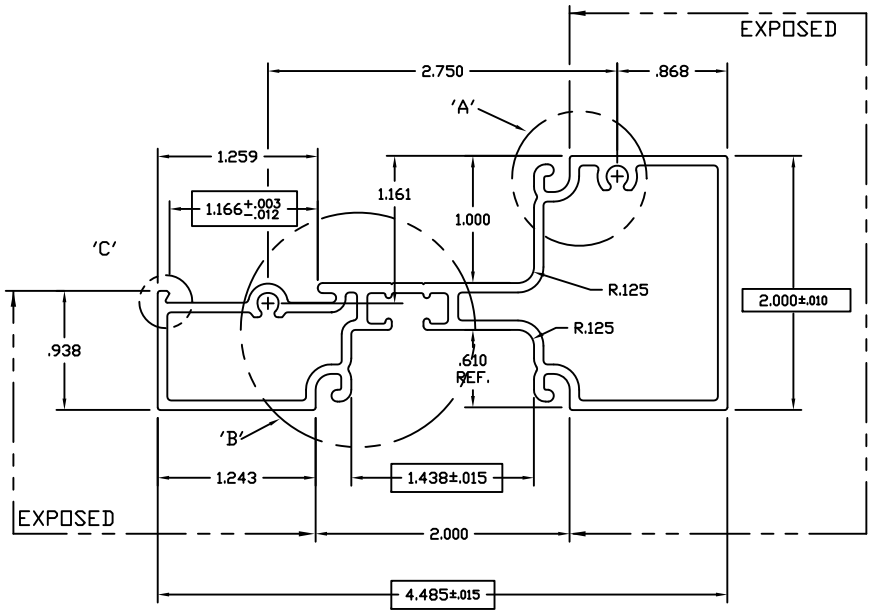
DETAIL 'A'
FOUR TIMES SIZE



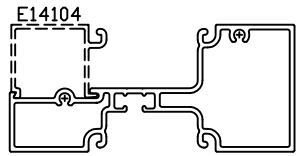
DETAIL 'B'
FOUR TIMES SIZE
D



DETAIL 'C'
FOUR TIMES SIZE



ACTUAL SIZE



INDICATES CRITICAL DIMENSION

LANCED AND FULLY DEBRIDGE

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED
ALL UNSPECIFIED RADII .015
* INDICATES .031 RADIUS
DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

TUBELITE® DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
E	03-05-10	Screwboss modification was .162±.004, E903K01	TT

WALL THK. .075	SECTION CLASS H	MAT'L 6063-T5	RATIO 47:1		
PERIMETER OUT (TOTAL) 17.444		AREA 1.167	WGT/FT 1.371		
FACTOR 9.3	CIRCLE SIZE 4.911	INFILL VOLUME			
RXX 1.407	SXX .945	IXX 2.309	CXX 2.443		
RYY .616	SYY .376	IYY .443	CYY 1.179		

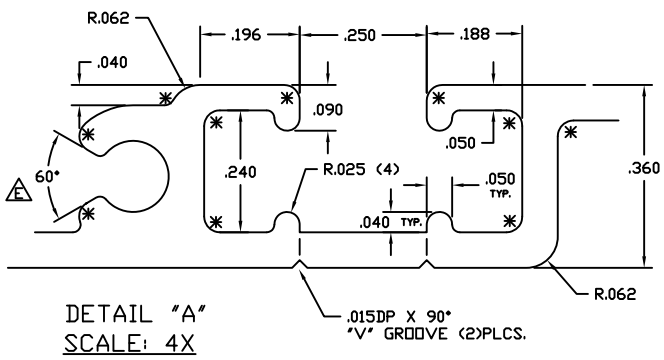
INTERMEDIATE HORIZONTAL 2" X 4 1/2"
E14000 NON THERMAL STOREFRONT

DRAWN BY CRH	DRWG DATE 05/04/09	APPV'D BY	DATE APPV'D	
DWG SCALE NOTED	PRODUCT CODE 190	E14143	REV E	

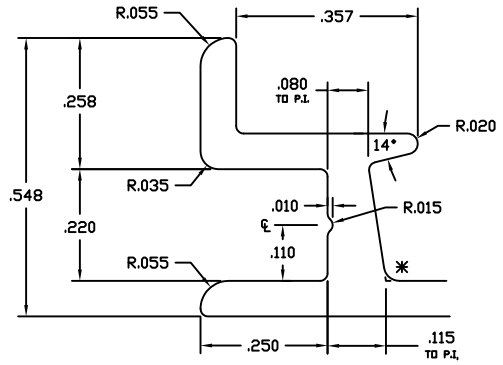
MATERIAL: PAINTED or ANODIZED ALUMINUM

Architectural Testing

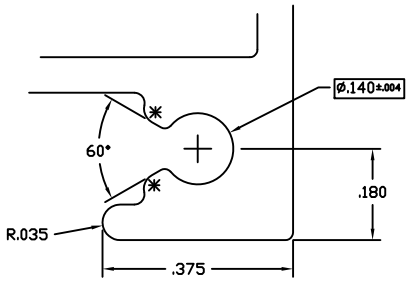
Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen L Riedsberger



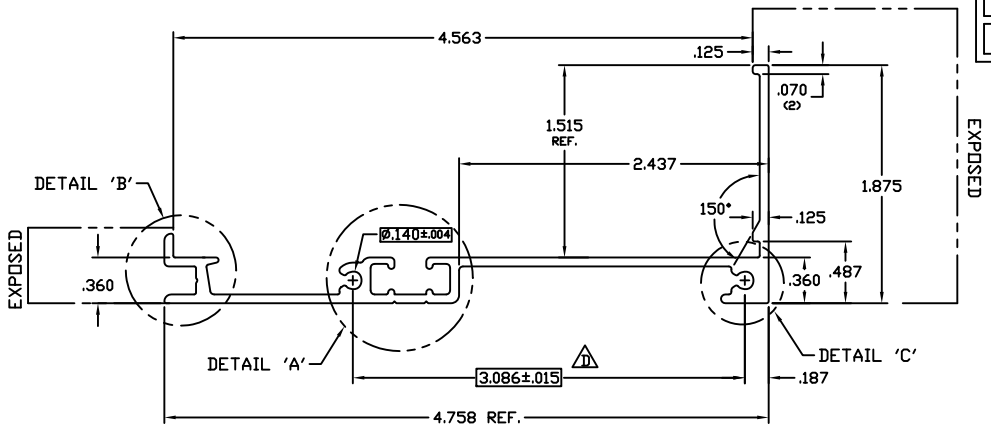
DETAIL "A"
SCALE: 4X



E DETAIL "B"
SCALE: 4X



DETAIL "C"
SCALE: 4X



FULL SIZE

INDICATES CRITICAL DIMENSION

1 LANCED AND FULLY DEBRIDGE

E14259 E

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED
ALL UNSPECIFIED RADII .015
* INDICATES .031 RADIUS
DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

TUBELITE® DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	04/01/93	RELEASE TO TOOLING	REW
	04/09/93	REV'D WALL THK, CALCS & RE-RELEASE TO TOOLING	REW
	5-18-93	RELEASE TO PRODUCTION	KMH
	7-7-93	REVISE EXTR. # WAS E-14046	KMH
A	7-28-93	REVISE SHAPE & RERELEASE TO TOOLING	KMH
	8-26-93	RELEASE TO PRODUCTION	KMH
B	01/03/06	REVISED SHAPE	LDD
C	03/13/06	REVISED P&D CAVITY FOR AZOBRADE	JEM
D	07/30/09	REVISED P&D CAVITY FOR LANCER, ADDED SCREW BOSSES	CRH

REV	DATE	DESCRIPTION	INTL
E	10/02/09	REVISED DETAIL "B", ROTATED SCREW BOSS, WAS E908.J06	CRH

WALL THK. 0.070	SECTION CLASS S	MAT'L 6063-T5	RATIO 83:1
PERIMETER OUT (TOTAL) 17.615		AREA .669	WGT/FT .787
FACTOR 23	CIRCLE SIZE 5.105		INFILL VOLUME .155

RXX 1.664	SXX .673	IXX 1.852	CXX 2.750
RYY .414	SYY .075	IYY .114	CYY 1.875

SILL FLASHING
T14000 THERMAL STOREFRONT

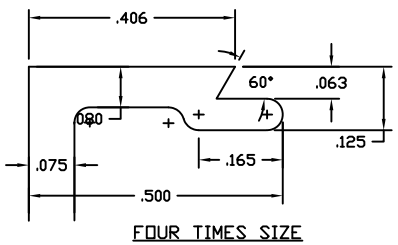
DRAWN BY KMH	DRWG DATE 03/11/93	APPV'D BY	DATE APPV'D	
DWG SCALE NOTED	PRODUCT CODE 190	E14259		REV E

MATERIAL: PAINTED or ANODIZED ALUMINUM

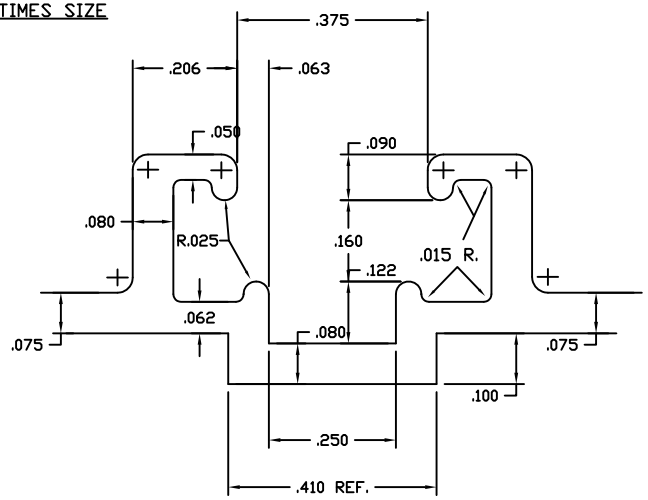
Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen K. Luedsburger

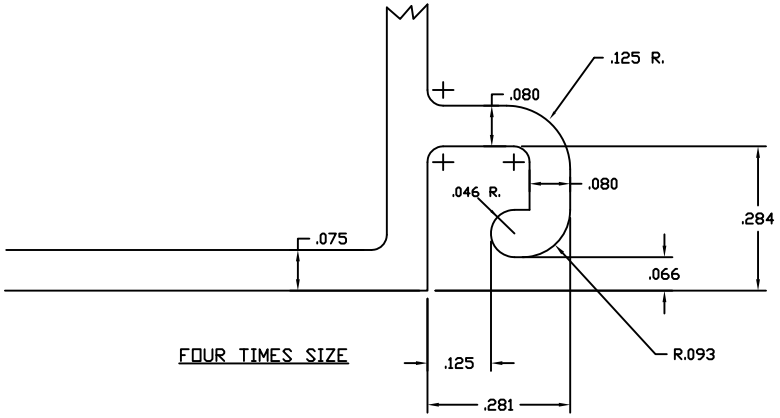
E14243



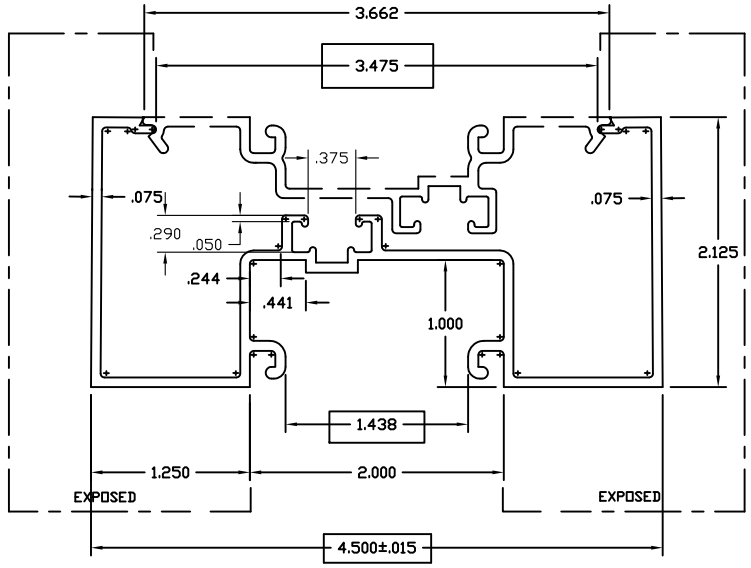
FOUR TIMES SIZE



FOUR TIMES SIZE



FOUR TIMES SIZE



ACTUAL SIZE

MATES WITH E-14242
FULLY DEBRIDGE

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED
ALL UNSPECIFIED RADII .015
* INDICATES .031 RADIUS
☐ DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

TUBELITE® DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	9-27-93	RELEASE TO TOOLING	GWM
	8/26/98	REVISE AND RELEASE TO TOOLING	SMF
	10/28/98	REV. AND RELEASE TO PROD. - .075 WALL	CAT
A	10/12/12	OBSOLETE 12/31/2012 PER ER-101211	NSJ

WALL THK.	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	54:1
PERIMETER OUT (TOTAL)	27.078			AREA	1.021	WGT/FT	1.201
FACTOR	23	CIRCLE SIZE	4.965			INFILL VOLUME	N/A

RXX	1.586	SXX	1.129	IXX	2.570	CXX	2.276
RYY	.645	SYY	.326	IYY	.425	CYY	1.306

OPEN BACK TUBE 2 1/8" X 4 1/2"
E14000 NON THERMAL STOREFRONT

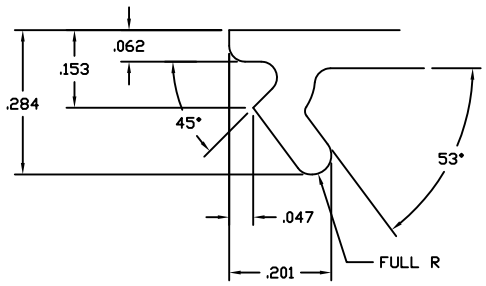
DRAWN BY	GWM	DRWG DATE	09/27/93	APPV'D BY	DATE APPV'D
DWG SCALE	NOTED	PRODUCT CODE	190	E14243	REV

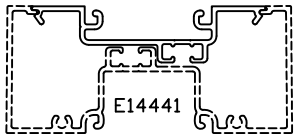
MATERIAL: PAINTED or ANODIZED ALUMINUM

Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen K. Kindsberger

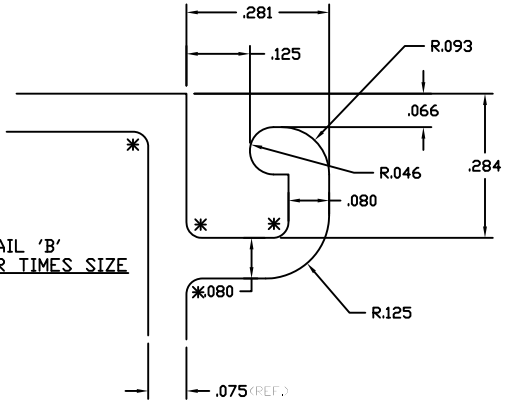
E14442



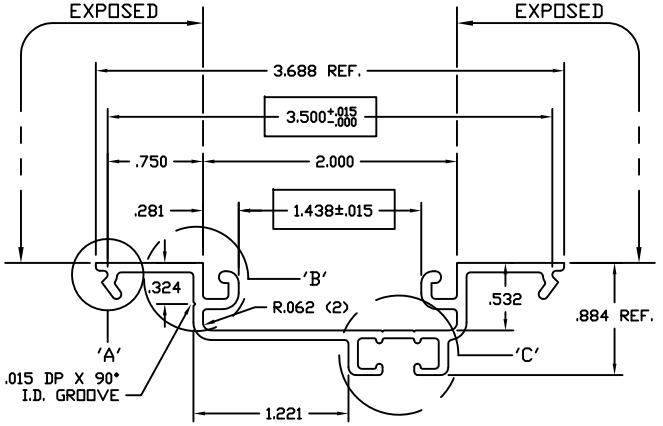


HALF SIZE ASSEMBLY

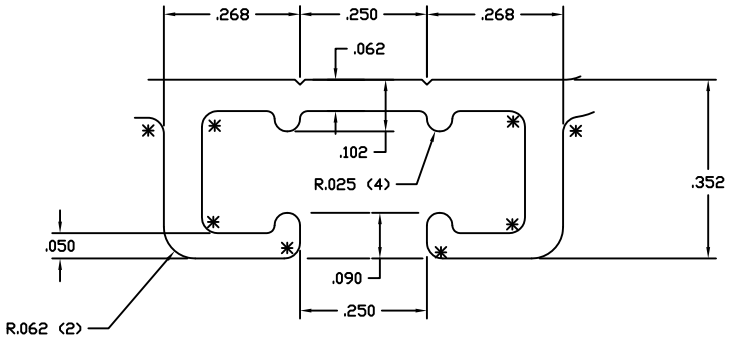
DETAIL 'A'
FOUR TIMES SIZE



DETAIL 'B'
FOUR TIMES SIZE



FULL SIZE



DETAIL 'C'
FOUR TIMES SIZE

NOTES:
MATES WITH E14441, E14243
FULLY DEBRIDGE
P & D THERMAL BREAK

ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED
ALL UNSPECIFIED RADII .015
* INDICATES .031 RADIUS
DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

TUBELITE DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL

WALL THK.	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	105:1
PERIMETER OUT (TOTAL)	14.207			AREA	.525	WGT/FT	.617
FACTOR	23	CIRCLE SIZE	3.688			INFILL VOLUME	.158

RXX	1.040	SXX	.298	IXX	.568	CXX	1.905
RYY	.261	SYY	.068	IYY	.036	CYY	.529

SNAP IN FILLER WITH POCKET
T14000 THERMAL STOREFRONT

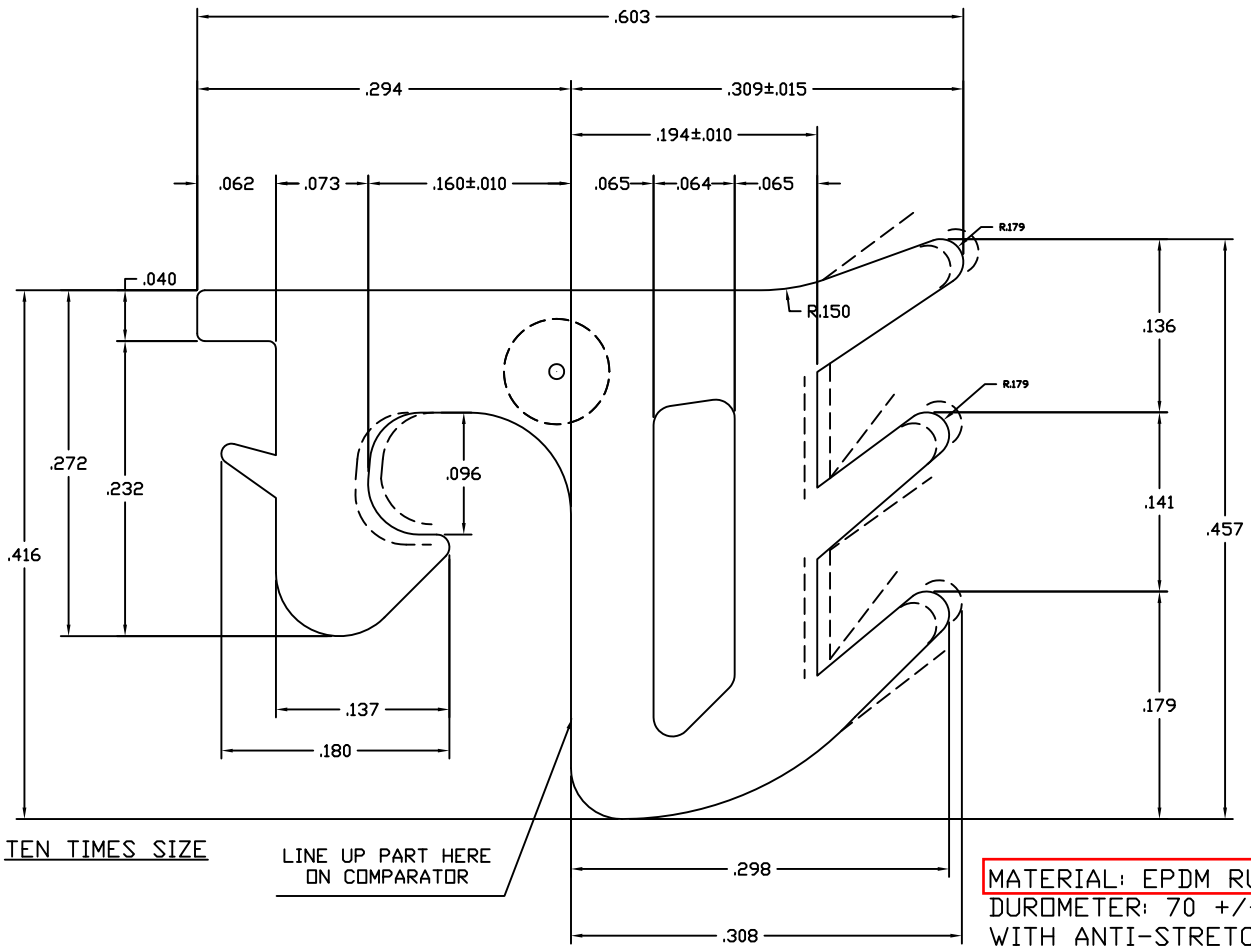
DRAWN BY	CRH	DRVG DATE	10/25/10	APPV'D BY	DATE APPV'D
DWG SCALE	NOTED	PRODUCT CODE	180	E14442	REV

MATERIAL: PAINTED or ANODIZED ALUMINUM

Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen K. Luedsburger

P2728



TEN TIMES SIZE

LINE UP PART HERE ON COMPARATOR

MATERIAL: EPDM RUBBER WITH ANTI-STRETCH CORD
DUROMETER: 70 +/- 5
WITH ANTI-STRETCH CORD
WITH LUBRICANT

ACTUAL SIZE

ACCEPTABLE STRING LOCATION

ALL TOLERANCES ARE RMA CLASS II UNLESS OTHERWISE NOTED

ALL UNSPECIFIED RADII .015
* INDICATES .031 RADIUS
DENOTES CRITICAL DIMENSION

REV	DATE	DESCRIPTION	INTL
	08/20/09	RELEASE FOR PRODUCTION	NSJ

TUBELITE® DEPENDABLE
LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

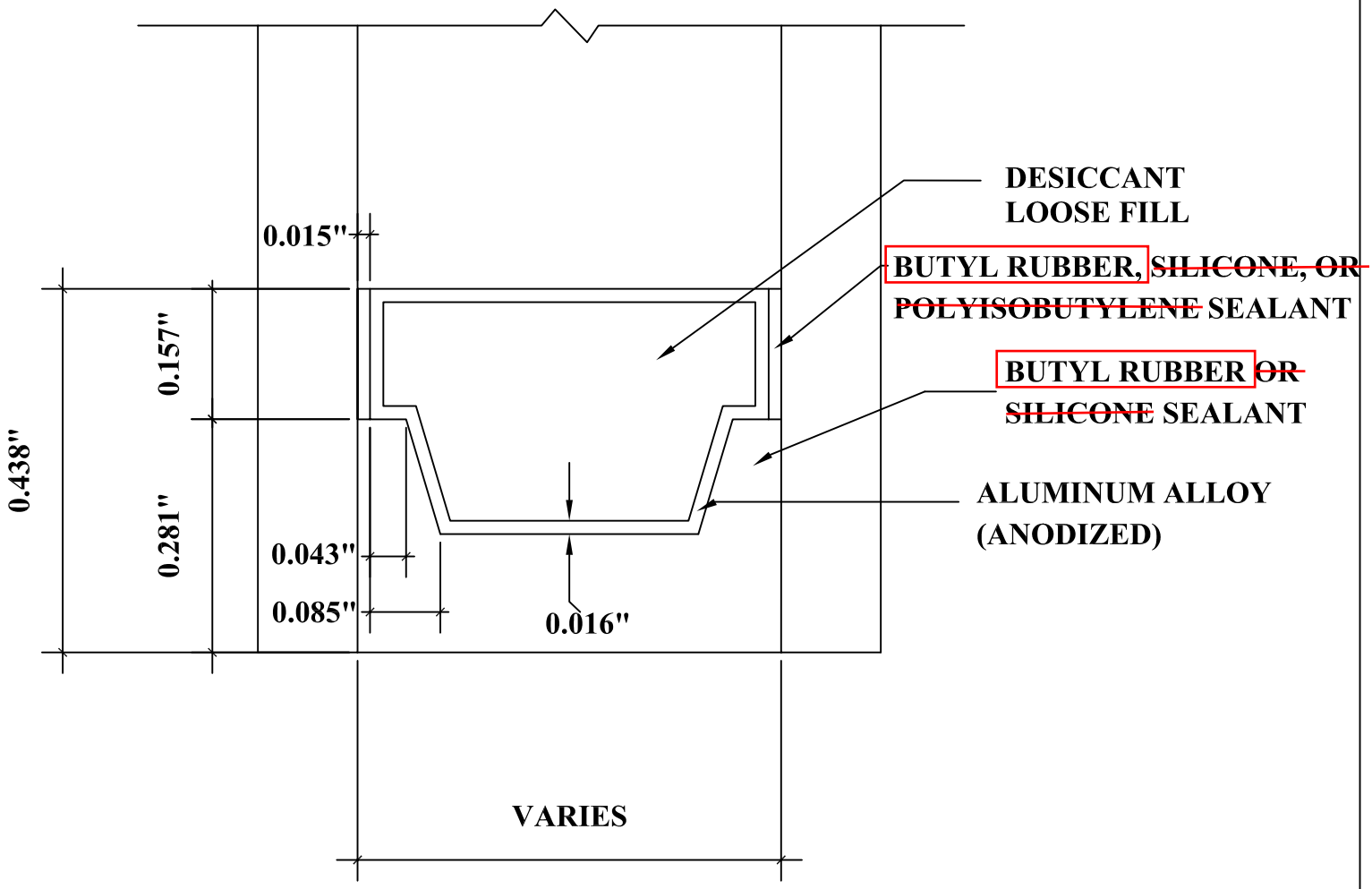
3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

ROLL-IN GLAZING GASKET
14000 AND 4500 STOREFRONT SYSTEMS

DRAWN BY	DRWG DATE	APPV'D BY	DATE APPV'D	REV
JEM	08/14/09			
DRWG SCALE: NOTED	PRODUCT CODE: 190	P2728		

Architectural Testing

Report #: B6911-116-45
Date: 05/29/13
Verified by: Kristen K. Luedsinger



DETAIL FOR THERMAL MODELING OF
ALUMINUM SPACER (A1-D)