

**NFRC U-FACTOR & SHGC / VT
COMPONENT MODELING APPROACH (CMA)
COMPUTER SIMULATION REPORT**

**Rendered to:
Tubelite, Inc.**

**SERIES/MODEL:
T14000 Inside Set / Outboard Plane System**

**Report No.: B6918.01-116-45
Report Date: 06/15/12**

COMPONENT MODELING APPROACH (CMA)
TEST REPORT

Rendered to:

TUBELITE, INC.
4878 Mackinaw Trail
Reed City, Michigan 49677

Report No: B6918.01-116-45
Simulation Date: 06/15/12
Report Date: 06/15/12

Project Summary:

Architectural Testing, Inc. was contracted to perform U-Factor, Solar Heat Gain Coefficient, and Visible Transmittance 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.

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

Software:

Frame and Edge Modeling: THERM 6.3.38
Center-of-Glass Modeling: WINDOW 6.3.54
Total Product Calculations: CMAST 1.2.03
Spectral Data Library: 23.0

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). The physical test sample was anodized aluminum.
- 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 8.10.1.
- 4) The T14000 Inside Set/Outboard Plane System and T14000 Outside Set/Inboard Plane System can be within the same validation matrix per, NFRC 100-2010 Section 4.2.3.1.A & D. The T14000 Inside Set/Inboard Plane System was physically tested.
- 5) Best Spacers, Inc. was used as a generic spacer manufacturer in CMAST for validation since the actual spacer manufacturer was not entered in the database.

Validation Option

Frame/Spacer Component Description

Component Type	Server ID	Component Name
Product:	P-TUB-11035	TUB-T14000 Inside Set/Outboard Plane System-Validation
Frame Assembly:	FA-TUB-15635	TUB-T14000 Inside Set/Outboard Plane System-Validation
Frame:	F-TUB-10673	TUB-T14000I/O Head w/Thermal Filler - 14300/14304-VAL
	F-TUB-10646	TUB-T14000O/O Sill Screw Spline - 14301/14259-VAL
	F-TUB-10662	TUB-T14000O/O Jamb Screw Spline - 14306/14302-VAL
	F-TUB-10664	TUB-T14000O/O Intermed Vert Screw Spline - 14306/14302-VAL
Spacer Assembly:	SA-BSP-3288	Validation: Azon Warm Light Spacer (0.530" - PIB/Silicone)
COG Assembly:	GA-PPG-4819	Clear/0.530 Air/S500 (6mm)

Test Unit Size: 78.74 inches wide by 78.74 inches high

0.451	Total Product U-Factor
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Framing Product Line:	PL-TUB-2996	T14000 Inside Set / Outboard Plane System
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Server ID	Frame Component Name	Frame Type	Sash Type	PDF (in.)	Gap Width (in.)	U-Frame (avg) Btu/hr-ft²-F	U-Edge (avg) Btu/hr-ft²-F
F-TUB-10616	TUB-T14000I/O Head - 14300/14304	AT	N	2.084	1.000	1.413	0.344
F-TUB-10631	TUB-T14000I/O Head w/ Head Receptor - 14300/14304/14129/14130	AT	N	3.084	1.000	1.206	0.350
F-TUB-10644	TUB-T14000I/O Head w/Thermal Filler - 14300/14304	AT	N	2.084	1.000	1.125	0.340
F-TUB-10645	TUB-T14000I/O Intermed Horz Head - 14303/14304	AT	N	1.084	1.000	1.190	0.331
F-TUB-10635	TUB-T14000I/O Intermed Horz Sill - 14303/14304	AT	N	1.084	1.000	1.221	0.321

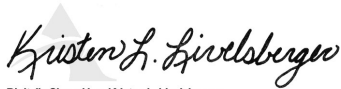
Component values included in this report are for submittals to an NFRC-licensed IA and are not meant to be used directly for labeling purposes. Only those values approved and identified on a valid CMA Label Certificate are to be used for labeling purposes. The ratings values were rounded in accordance to NFRC 601, NFRC Unit and Measurement Policy.

Architectural Testing 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.

Detailed drawings, simulation data files, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, until 06/15/16 . 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 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:



Digitally Signed by: Kristen L. Livelsberger

Kristen L. Livelsberger
Senior Simulation Technician
NFRC Certified Simulator

REVIEWED BY:



Digitally Signed by: Michael J. Thoman

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

KLL:klI

B6918.01-116-45

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

Appendix A: Drawings and Bills of Material (20)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	06/15/12	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

B6918.01-116-45

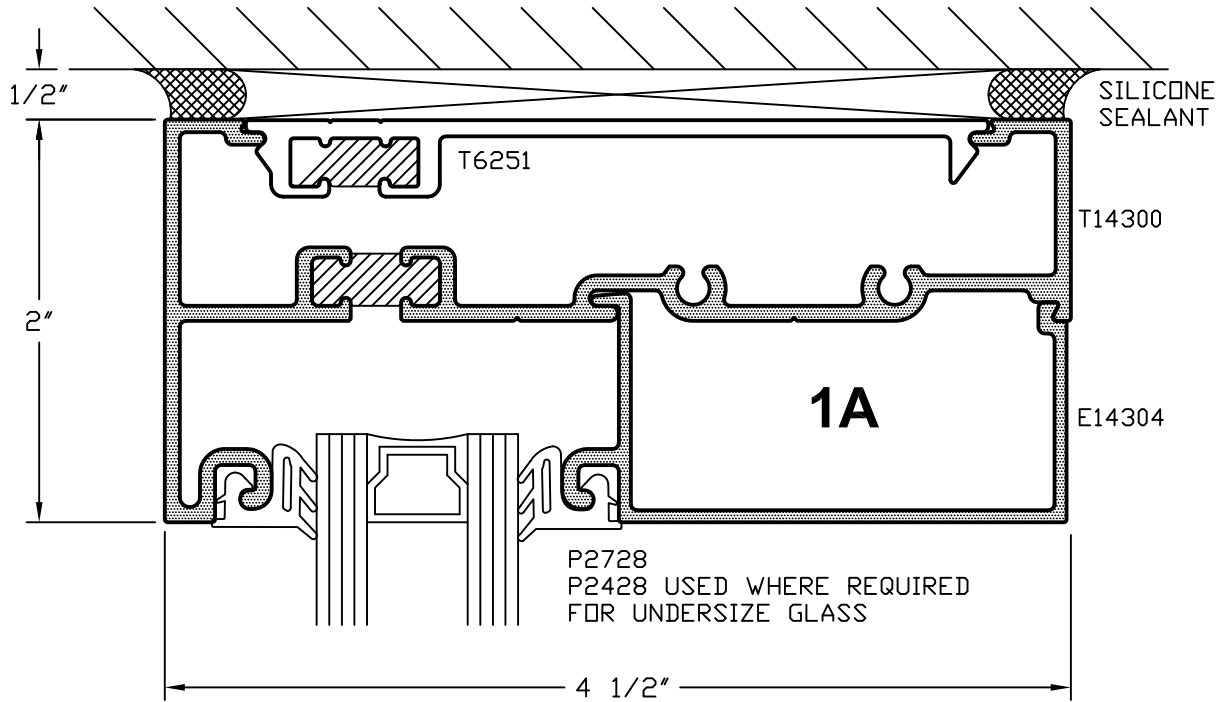


Report #: B6918-116-45

Date: 6/13/12

Architectural Testing Verified by: *Kristen R. Luedtke*

T914 I-1A



TUBELITE[®]
 STOREFRONT, CURTAINWALL
 & ENTRANCE SYSTEMS
DEPENDABLE

T14000 I/O SERIES - OUTBOARD
 THERMAL SIM TEST
 HEAD DETAIL

DRAWN BY TT	DRWG DATE 11/30/2011	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 180	T914 I-1A		



Report #: B6918-116-45

Date: 6/13/12

Verified by: *Kristen S. Luelsinger*

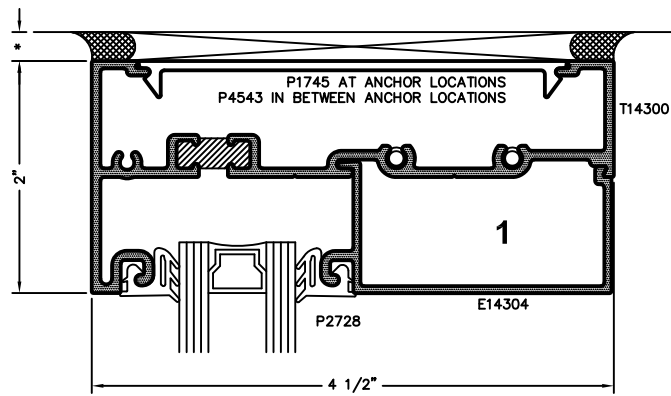
Architectural Testing

15.07

14000 Series Flush Glaze - I/O Plane
Screw Spline Head - Inside Set/Outboard Plane

- * 1/2" WHEN USING E-14259 FLASHING
- * 1/4" WHEN USING E-45159 FLASHING

CAD DETAIL FILE NO.
180HEAD9

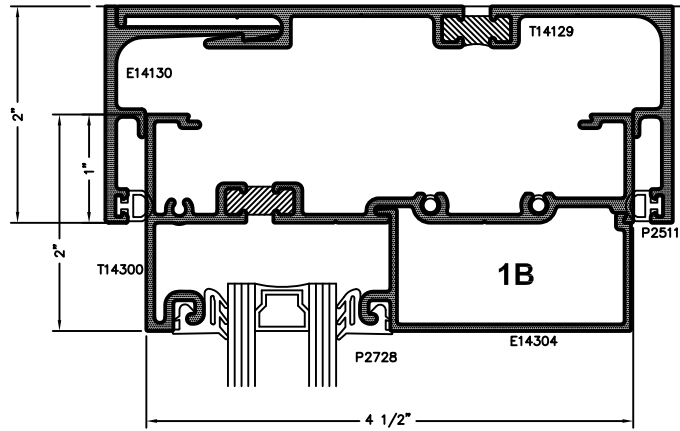


SUBSTITUTE E14300 FOR T14300, IF
THERMAL BREAK IS NOT REQD.

180HEAD9

15.09
14000 Series Flush Glaze
Head Receptor - Inside Set

CAD DETAIL FILE NO.
180HEAD11



SUBSTITUTE E14329 & E14300 FOR
T14329 & T14300, IF THERMAL
BREAK IS NOT REQD.

180HEAD11



Report #: B6918-116-45

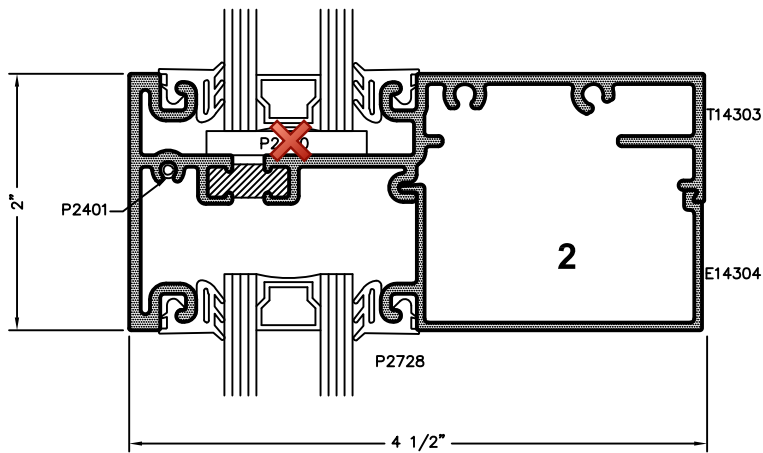
Date: 6/13/12

Architectural Testing Verified by: *Kristen S. Leibelberger*

15.13

14000 Series Flush Glaze - I/O Plane
Screw Spline Intermediate Horizontal - Inside Set/Outboard Plane

CAD DETAIL FILE NO.
180HORZ10



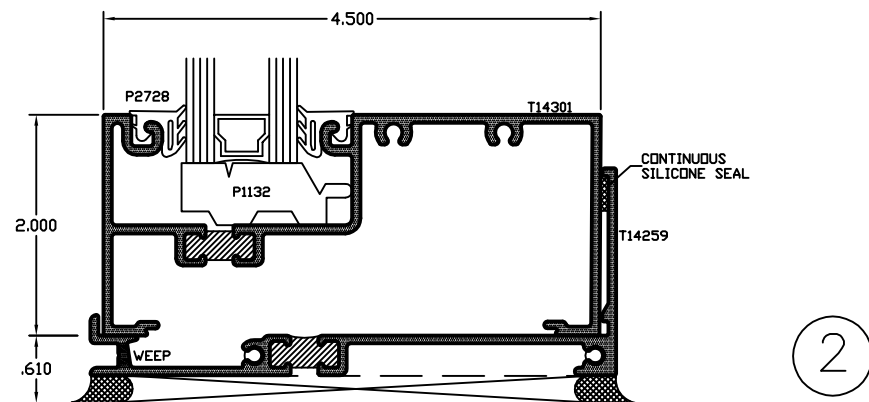
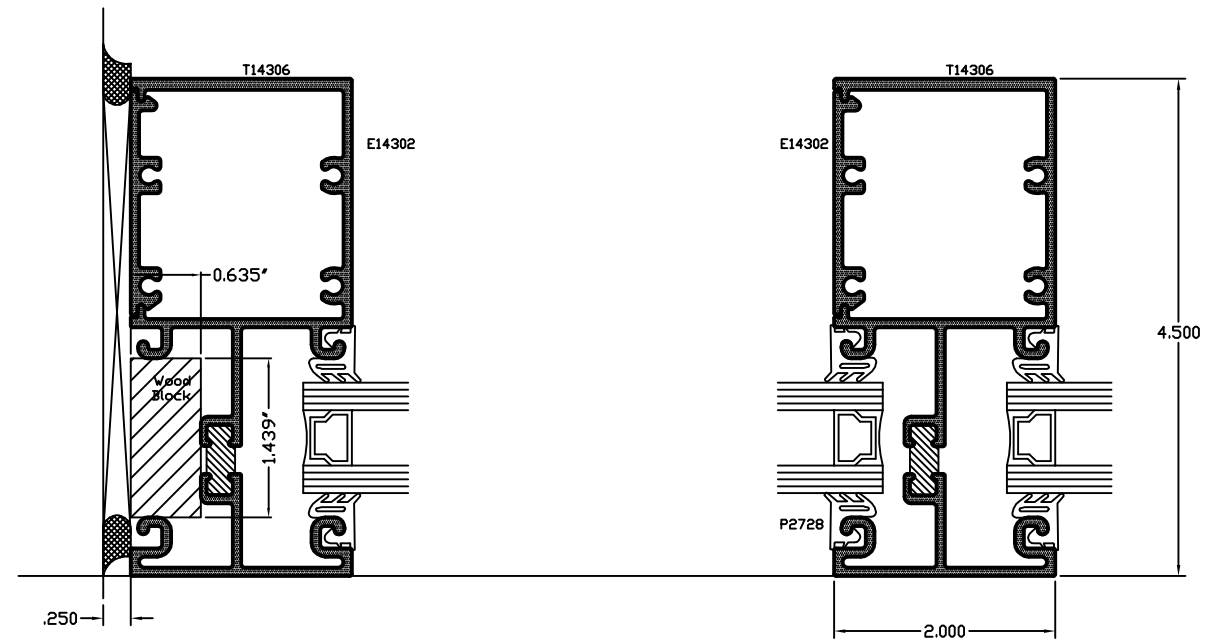
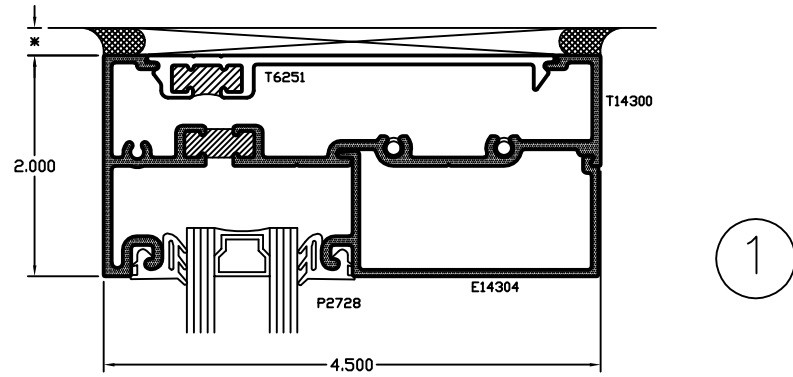
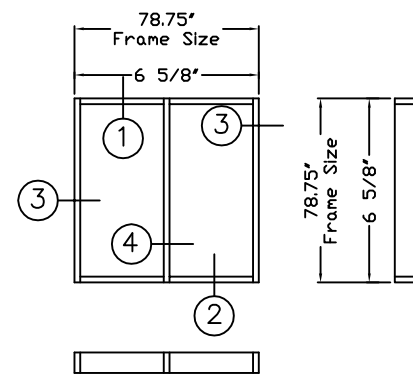
SUBSTITUTE E14303 FOR T14303, IF
THERMAL BREAK IS NOT REQD.

180HORZ10

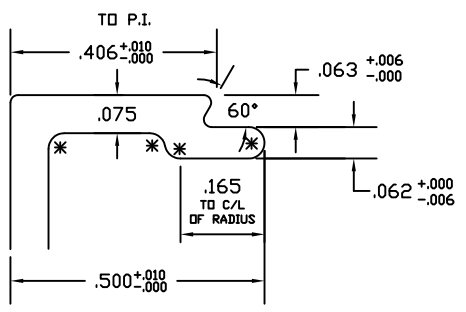
T-14000: Inside Set/ Outboard Glaze Series Thermal Mock Up #4

VALIDATION OPTION

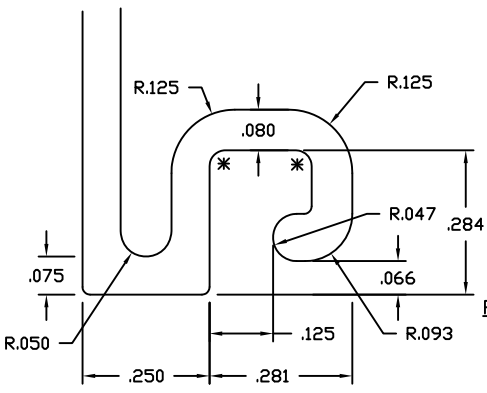
SCALE: 1/4" = 1'-0"



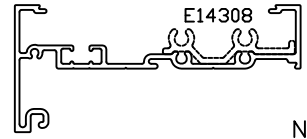
02/06/2012



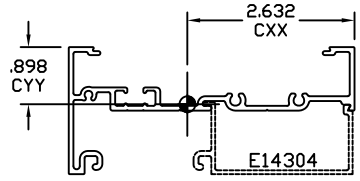
DET 'A'
FOUR TIMES SIZE



DET 'E'
FOUR TIMES SIZE

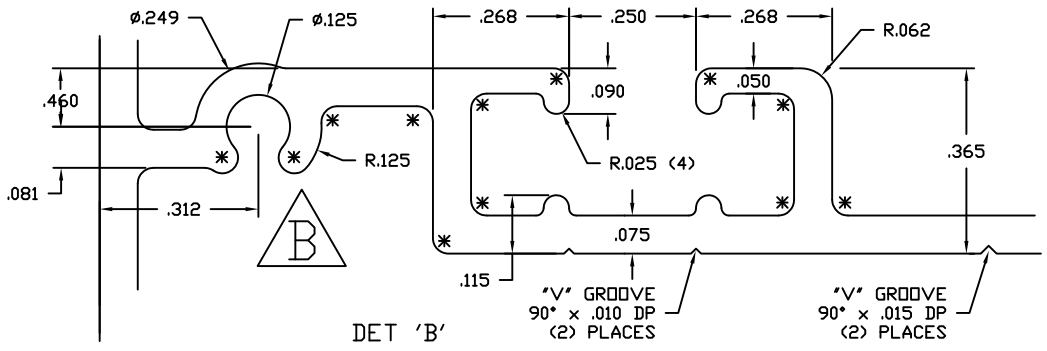


HALF SCALE ASSEMBLY

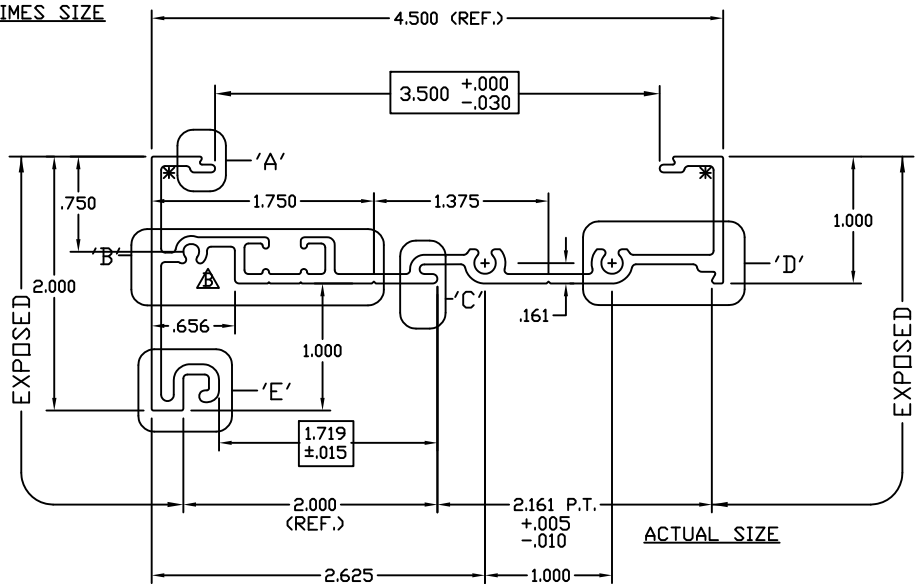


HALF SCALE ASSEMBLY

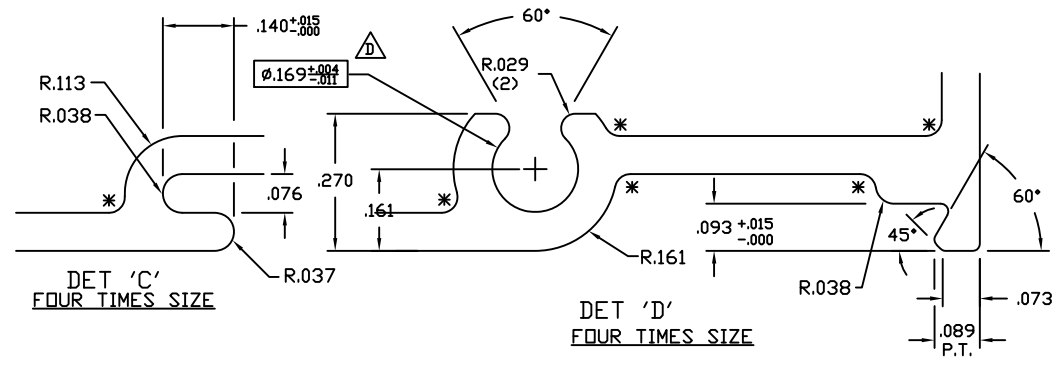
NOTES:
 FULLY DEBRIDGE
 MATES WITH E14304
 MATES WITH E14308



DET 'B'
FOUR TIMES SIZE



ACTUAL SIZE



DET 'C'
FOUR TIMES SIZE

DET 'D'
FOUR TIMES SIZE

▲ LANCED AND FULLY DEBRIDGE

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 ALL UNSPECIFIED RADII .015
 * INDICATES .031 RADIUS
 □ DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

TUBELITE
 SUPPLEMENTAL
 LANCED IN ECO-FRIENDLY OPERATING
 CURTAINWALL AND ENTRANCE SYSTEMS

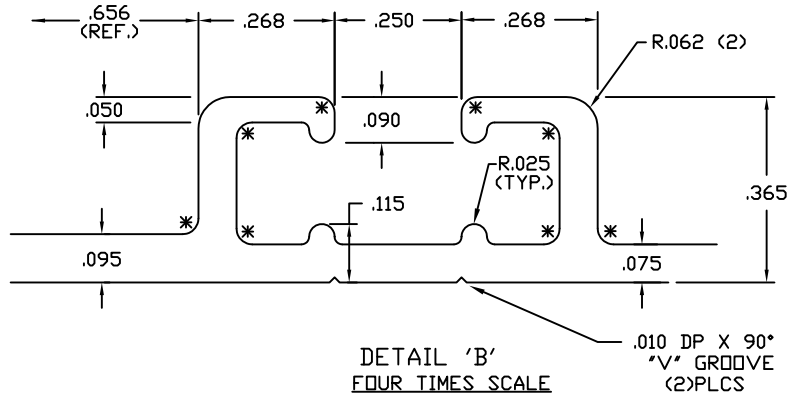
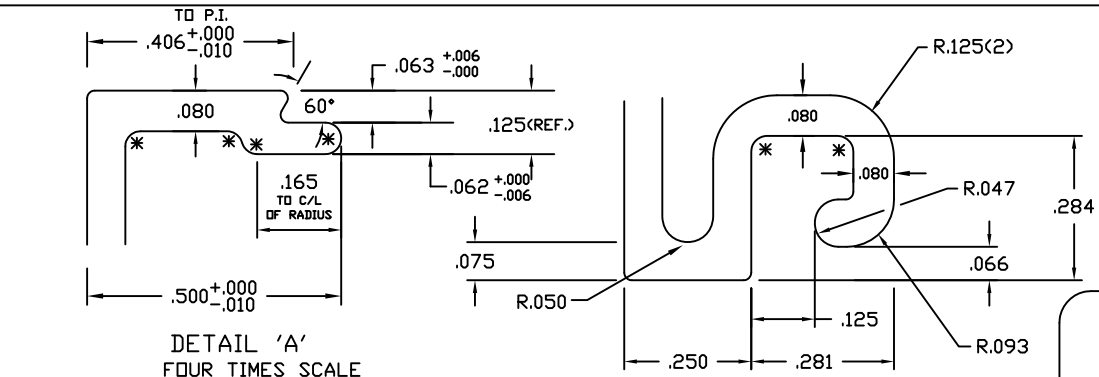
3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL THK	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	64:1
PERIMETER (OUT TOTAL)	22.535	AREA	.862	WGT/FT	1.014		
FACTOR	23	CIRCLE SIZE	5.242	INFILL VOLUME	.158		
RXX	1.618	SXX	.851	IXX	2.265	CXX	2.664
RYY	.465	SYY	.165	IYY	.186	CYY	1.129

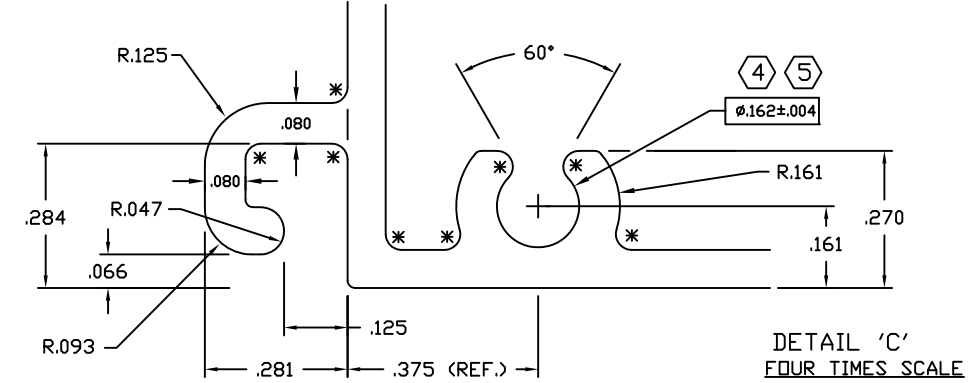
IS HEAD (F/R PLANE)
 E14000 NON THERMAL STOREFRONT

DRAWN BY	CDS	DRWG DATE	12/29/00	APP'D BY		DATE APP'D	
DWG SCALE	NOTED	PRODUCT CODE	190		E14300		D

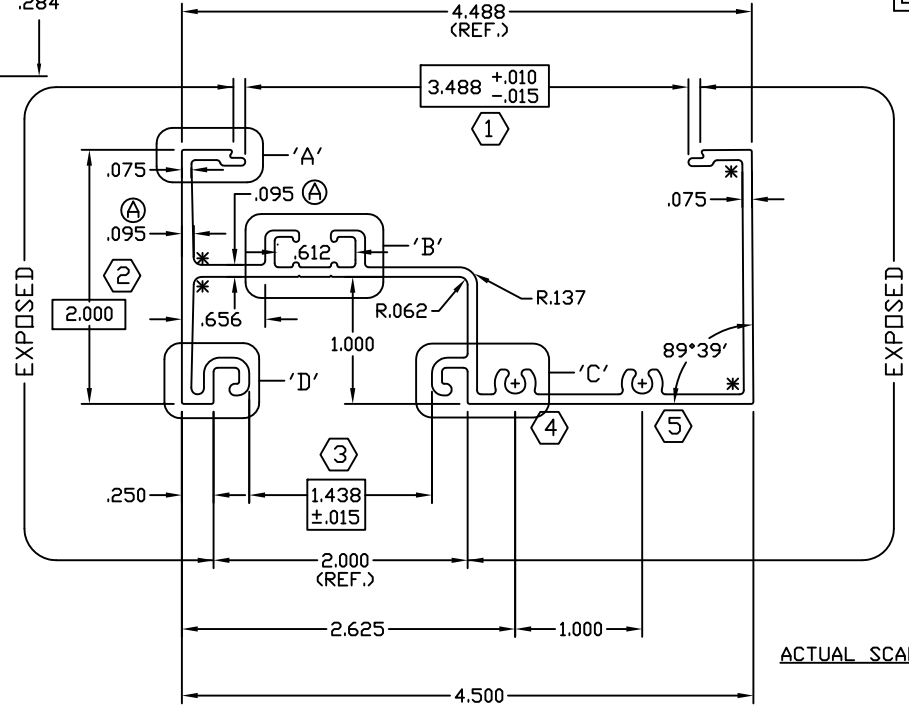
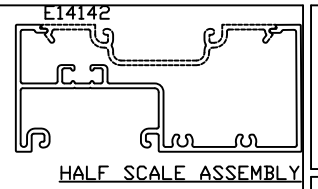
REV	DATE	DESCRIPTION	INTL
A	05/23/06	ADDED SCREW BOSS FOR ROLL PIN	LDO
B	06/26/06	RELEASED FOR PRODUCTION	JEM
C	08/31/09	RELOCATED SCREW BOSS FOR ROLL PIN IN REVISION 'A'	NJK
D	11/17/11	ADDED LANCED NOTE	CRH



DETAIL 'D' FOUR TIMES SCALE



NOTES:
 FULLY DEBRIDGE
 MATES WITH E14242



LANCED AND FULLY DEBRIDGE

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 * INDICATES .031 RADIUS
 □ DENOTES CRITICAL DIMENSION
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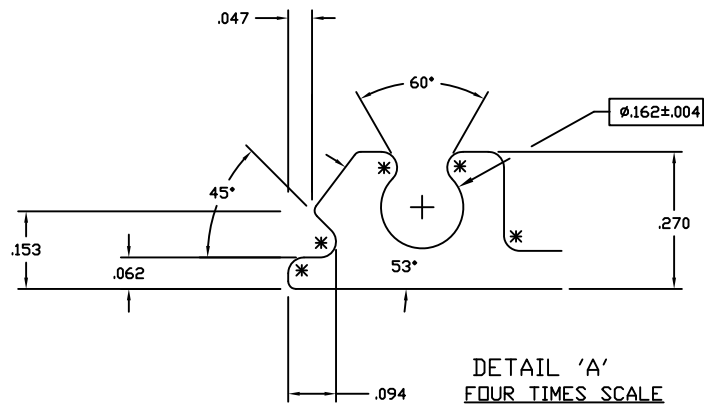
TUBELITE
 LEADING IN HIGH-END WINDOW OPERATING CURTAINWALL AND ENTRANCE SYSTEMS
 3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL THK	NOTED	SECTION S	MAT'L 6063-T5	RATIO 52:1
PERIMETER OUT (TOTAL)	26.458	AREA	1.054	WGT/FT 1.239
FACTOR	22	CIRCLE SIZE	4.924	INFILL VOL/INE .158
RXX 1.626	SXX 1.372	IXX 2.787	CXX 2.469	
RYX .621	SYX .531	IYY .407	CYY 1.235	

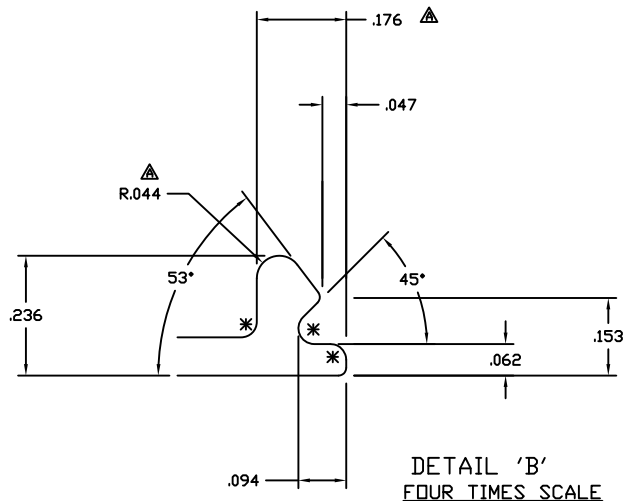
HEAD/JAMB/SILL 14000 I/O 2" X 4 1/2"
 E14000 NON THERMAL STOREFRONT

DRAWN BY	CDS	DRWG DATE	12/29/00	APP'D BY	MJC	DATE APP'D	01/19/01
DWG SCALE	NOTED	PRODUCT CODE	190			E14301	B

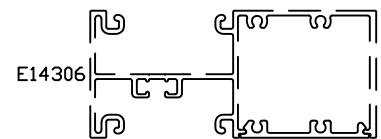
NOTES:
MATES WITH E14306



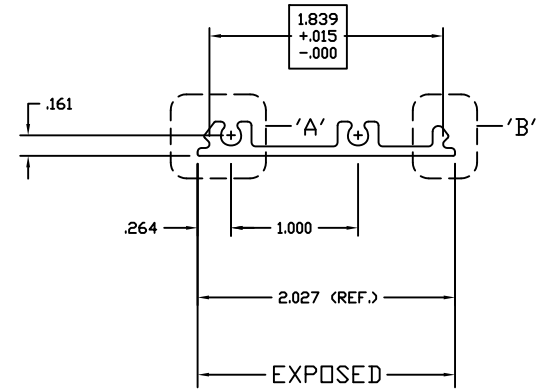
DETAIL 'A'
FOUR TIMES SCALE



DETAIL 'B'
FOUR TIMES SCALE



HALF SIZE ASSEMBLY



ACTUAL SIZE

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* INDICATES .031 RADIUS
□ DENOTES CRITICAL DIMENSION
ALL DIES PROPERTY OF TUBELITE

TUBELITE
DEPENDABLE
LEADING IN ECO-FRIENDLY OPERATIONAL
CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

WALL THK	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	225:1
PERIMETER OUT (TOTAL)	5.871	AREA	.245	WGT/FT	.288		
FACTOR	20	CIRCLE SIZE	2.027	INFILL VOLUME	N/A		
RXX	.599	SXX	.082	IXX	.087	CXX	1.059
RYY	.074	SYY	.007	IYY	.001	CYY	.184

VERTICAL FILLER 14000 I/O
E14000 NON THERMAL STOREFRONT

REV	DATE	DESCRIPTION	INTL
A	06/15/01	TURNED SCREW SPLINE 45°	SRD
	07/20/01	RELEASED REVISED SHAPE FOR PRODUCTION	SRD
B	06/21/02	TURNED SECOND SCREW SPLINE 45°	CRH
C	02/23/04	TURNED SPLINES BACK, INCREASED THICKNESS	SRD

DRAWN BY	SRD	DRWG DATE	12/18/03	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	190	E14302			

E14302
C

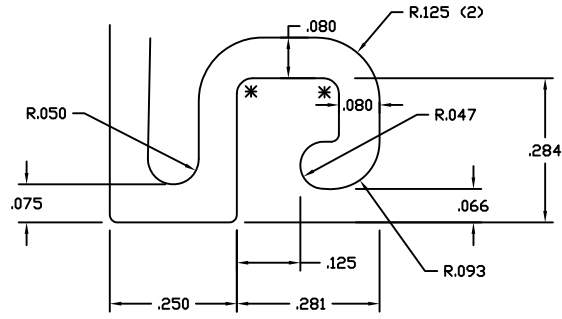


Report #: B6918-116-45

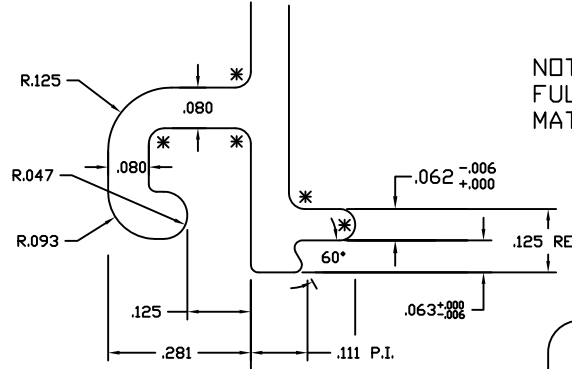
Date: 6/13/12

Verified by: *Luisana R. Landsberger*

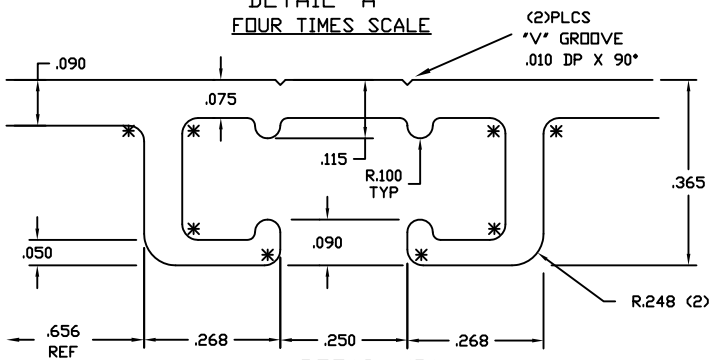
E14306
A



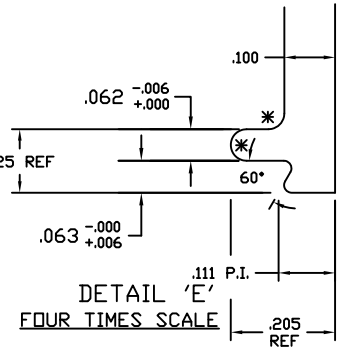
DETAIL 'A'
FOUR TIMES SCALE



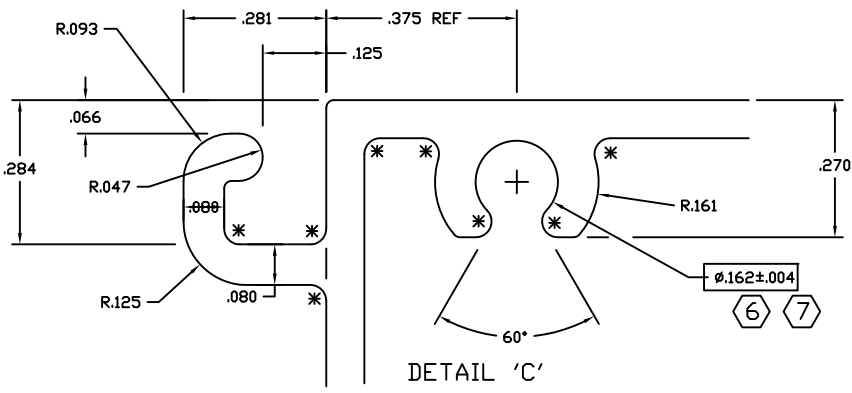
DETAIL 'D'
FOUR TIMES SCALE



DETAIL 'B'
FOUR TIMES SCALE

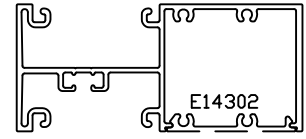


DETAIL 'E'
FOUR TIMES SCALE

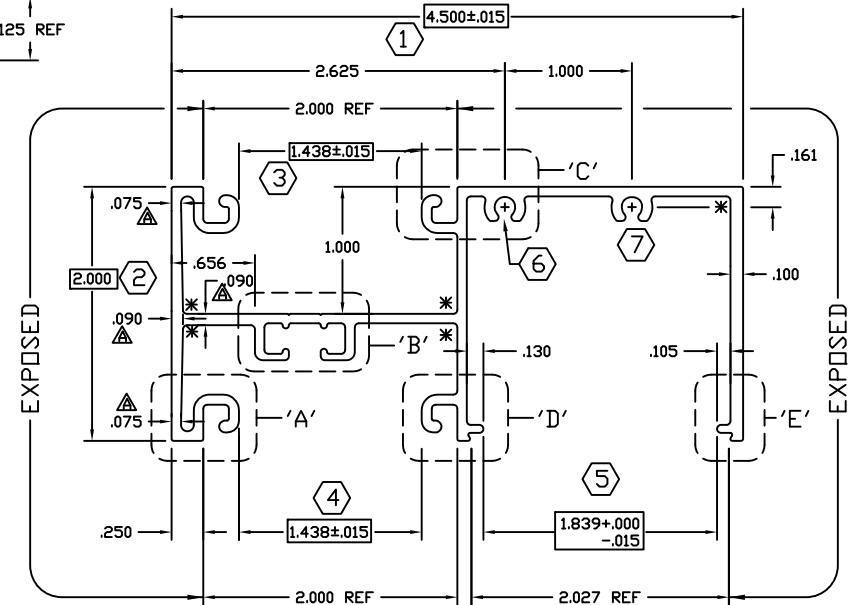


DETAIL 'C'
FOUR TIMES SCALE

NOTES:
FULLY DEBRIDGE
MATES WITH E14302



HALF TIMES SCALE



EXPOSED
ACTUAL SIZE

F/R PLANE

LANCED AND FULLY DEBRIDGE

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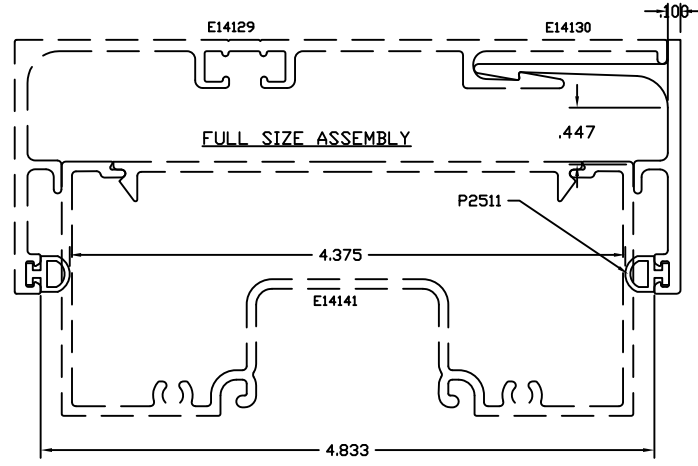
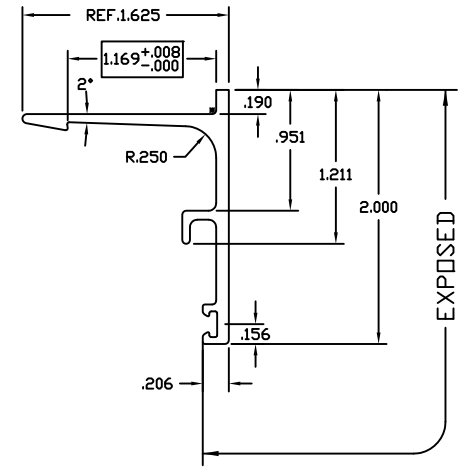
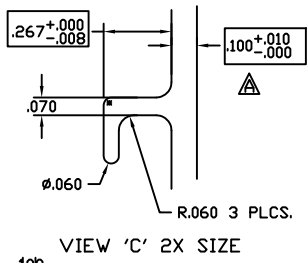
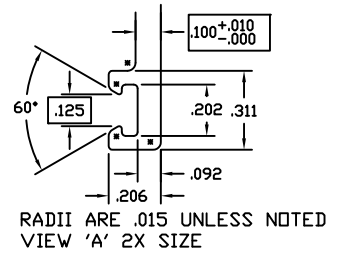
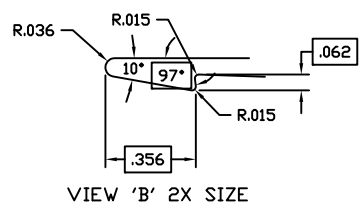
TUBELITE
SUPERDUAL
LEADING IN ECO-FRIENDLY OPERATING CURTAINWALL AND ENTRANCE SYSTEMS
3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

WALL THK	.075	SECTION	S	MAT'L	6063-T5	RATIO	46:1
PERIMETER (OUT TOTAL)	29.883	AREA	1.204	WGT/FT	1.416		
FACTOR	22	CIRCLE SIZE	4.924	JNT'LL VOLUME	.158		
RXX	1.582	SXX	1.217	IXX	2.937	CXX	2.414
RYY	.644	SYY	.438	IYY	.500	CYY	1.143

VERTICAL 14000 I/O 2" X 4 1/2"
E14000 NON THERMAL STOREFRONT

DRAWN BY	CDS	DRWG DATE	12/29/00	APP'VD BY	MJC	DATE APP'VD	01/19/01
DWG SCALE	NOTED	PRODUCT CODE	190	E14306	A		

E14130
A



WAS E912G02

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 ALL UNSPECIFIED RADII .015
 * INDICATES .031 RADIUS
 □ DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

TUBELITE
 SUPERDUAL®
 LEADING IN ECO-FRIENDLY OPERATING CURTAINWALL AND ENTRANCE SYSTEMS

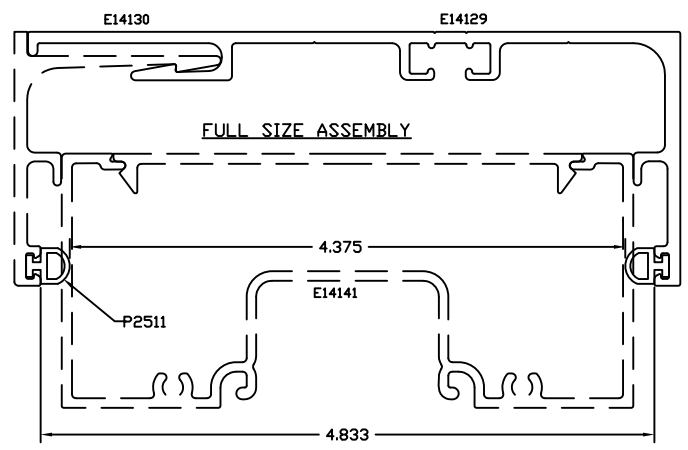
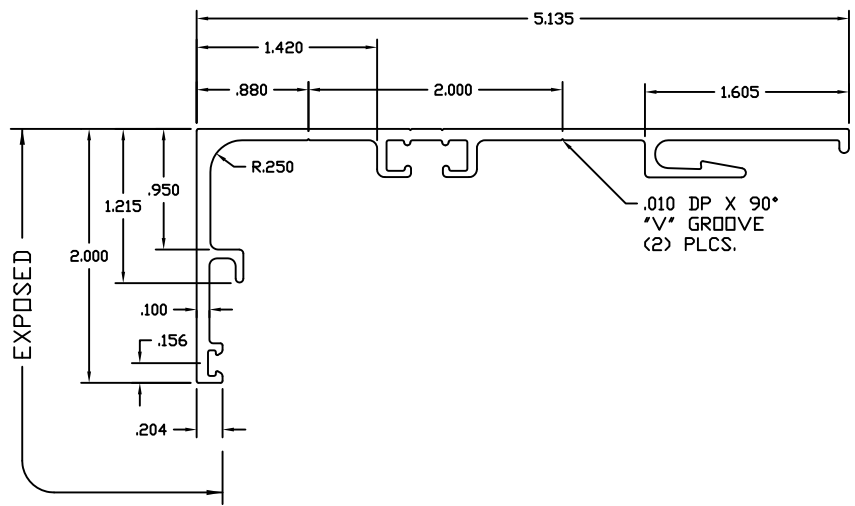
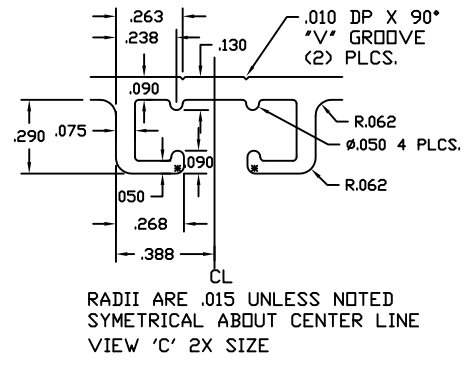
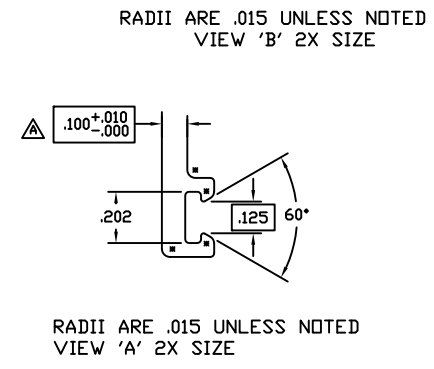
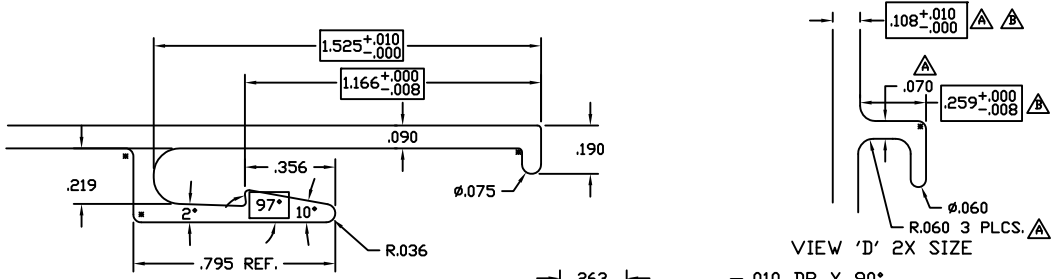
3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL THK.	NOTED	SECTION CLASS	S	MAT'L	6063-T5	RATIO	142
PERIMETER (OUT TOTAL)	8.413	AREA	.389	WGT/FT	.458		
FACTOR	19	CIRCLE SIZE	2.500	INFILL VOLUME	N/A		
RXX	.457	SXX	.061	IXX	.079	CXX	.625
RYY	.588	SYY	.108	IYY	.135	CYY	.641

**THERMAL HEAD RECEPTOR STOP 2"
 T14000 THERMAL STOREFRONT**

DRAWN BY	NIK	DRWG DATE	12/13/06	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	180		E14130	REV	A

E14129
C



WAS E912G01

\triangle LANCED AND FULLY DEBRIDGE

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 * INDICATES .031 RADIUS
 DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

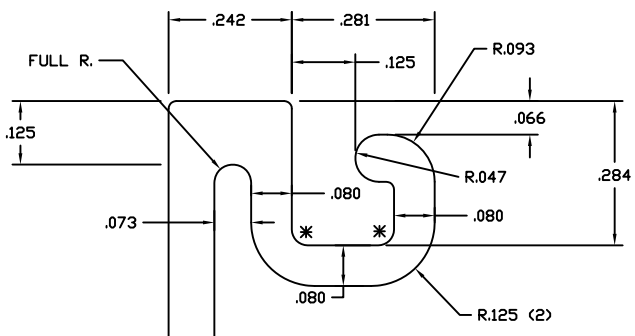
TUBELITE
 EXPANDED
 LEADING IN ECO-FRIENDLY OPERATING CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

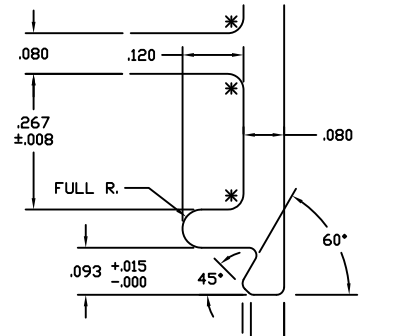
WALL THK	NOTED	SECTION CLASS	S	MAT'L	6063-T5	RATIO	64
PERIMETER (OUT TOTAL)	19.503	AREA	.881	WGT/FT	1.038		
FACTOR	19	CIRCLE SIZE	5.500	INFILL VOLUME	N/A		
RXX	1.676	SXX	.774	IXX	2.475	CXX	1.599
RYY	.521	SYY	.147	IYY	.239	CYY	.815

THERMAL HEAD RECEPTOR 2"
 T14000 THERMAL STOREFRONT

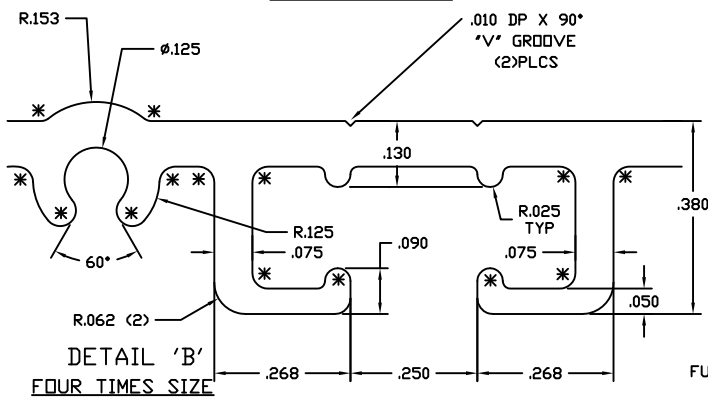
DRAWN BY	NIK	DRWG DATE	12/13/06	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	180	E14129			



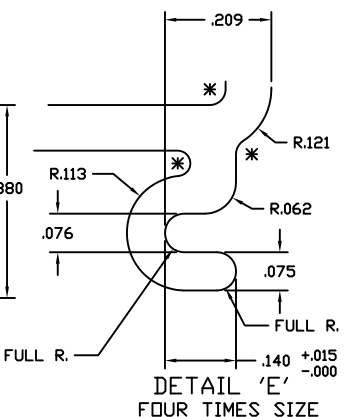
DETAIL 'A'
FOUR TIMES SIZE



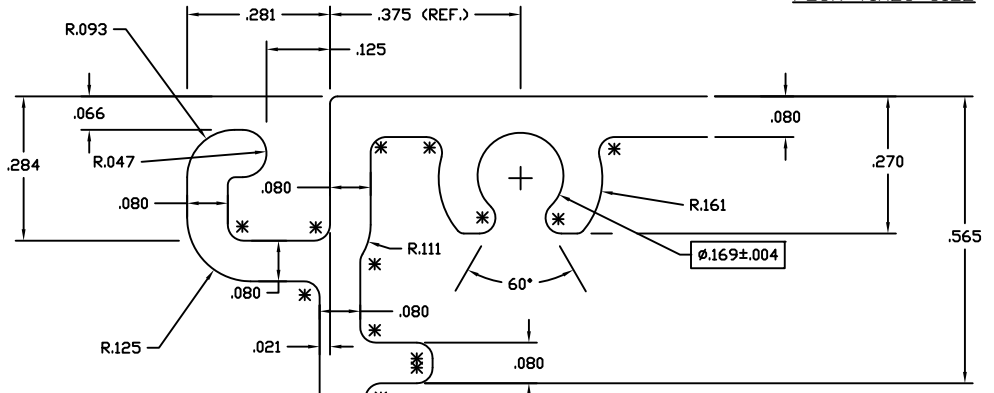
DETAIL 'D'
FOUR TIMES SIZE



DETAIL 'B'
FOUR TIMES SIZE

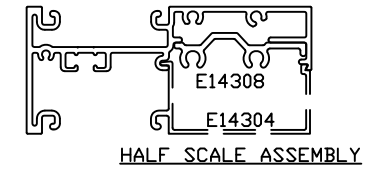


DETAIL 'E'
FOUR TIMES SIZE

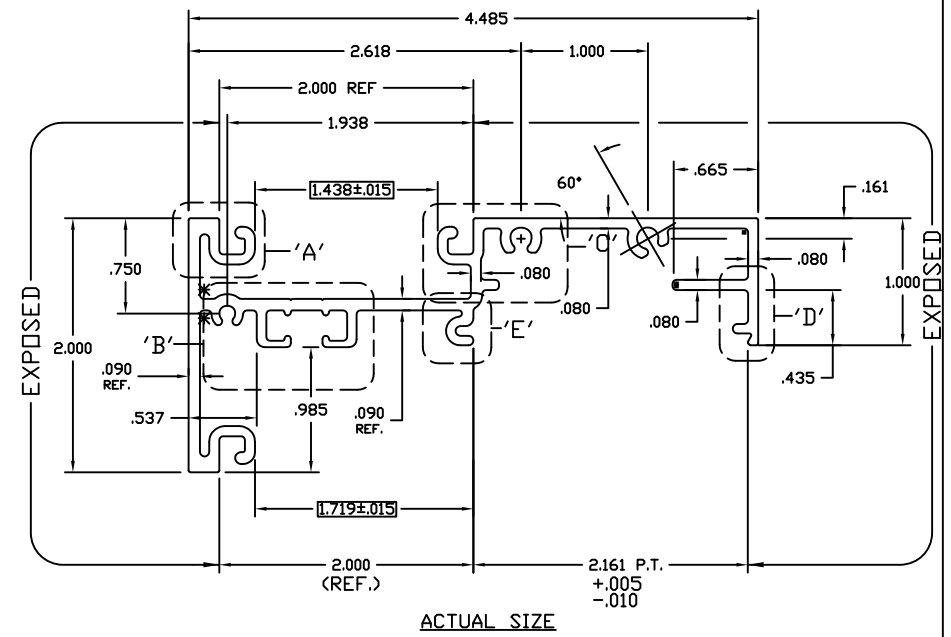


DETAIL 'C'
FOUR TIMES SIZE

NOTES:
 FULLY DEBRIDGE
 MATES WITH E14304
 MATES WITH E14308



HALF SCALE ASSEMBLY



ACTUAL SIZE

F/R PLANE ▲ LANCED AND FULLY DEBRIDGE

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 ALL UNSPECIFIED CORNERS .015R
 * INDICATES .031 RADIUS
 4878 MACKINAW TRAIL
 REED CITY, MICHIGAN 49677

TUBELITE
DEPENDABLE

WALL THK	.090	SECTION CLASS	S	MAT'L	6063-T5	RATIO	49:1
PERIMETER (OUT TOTAL)	26.460	AREA	1.121	WGT/FT	1.318		
FACTOR	20	CIRCLE SIZE	4.901	INFILL VOLUME	1.896		

RXX	1.531	SXX	.975	IXX	2.628	CXX	2.697
RYY	.526	SYY	.224	IYY	.310	CYY	1.380

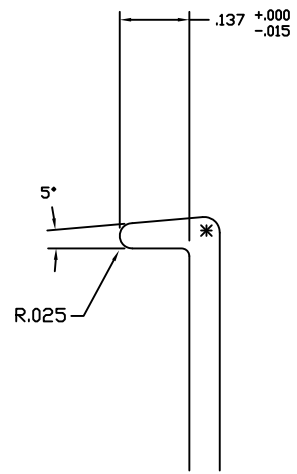
REV	DATE	DESCRIPTION	INTL
A	04/22/04	REVISED HOLLOW TO SOLID - INCREASED WALL THICKNESS	SRD
B	08/31/09	ADDED LANCED NOTE	CRH
C	05/12/10	Screw boss dia was .362 +/- .004	TT

IS INT. HORIZONTAL 14000 I/D 2" X 4 1/2"
 E14000 NON THERMAL STOREFRONT

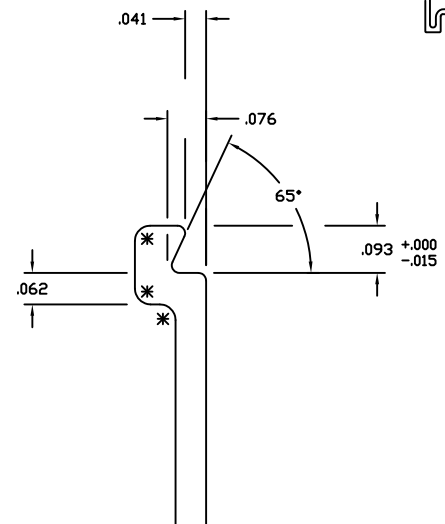
DRAWN BY	CDS	DRWG DATE	12/29/00	APP'D BY	MJC	DATE APP'D	02/09/01
DWG SCALE	NOTED	PRODUCT CODE	190			E14303	C

E14303
C

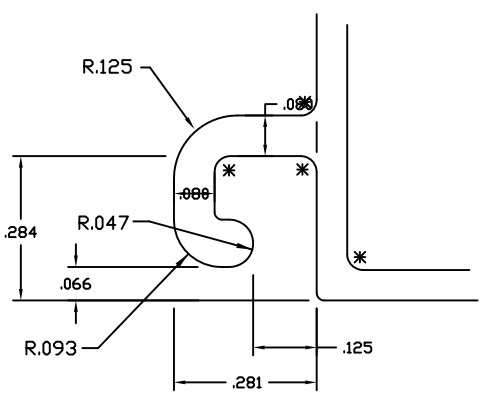
EXPOSED



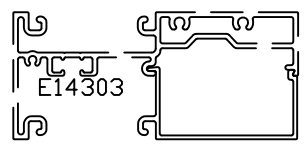
DETAIL 'A'
FOUR TIMES SCALE



DETAIL 'C'
FOUR TIMES SCALE

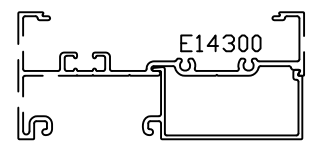


DETAIL 'B'
FOUR TIMES SCALE



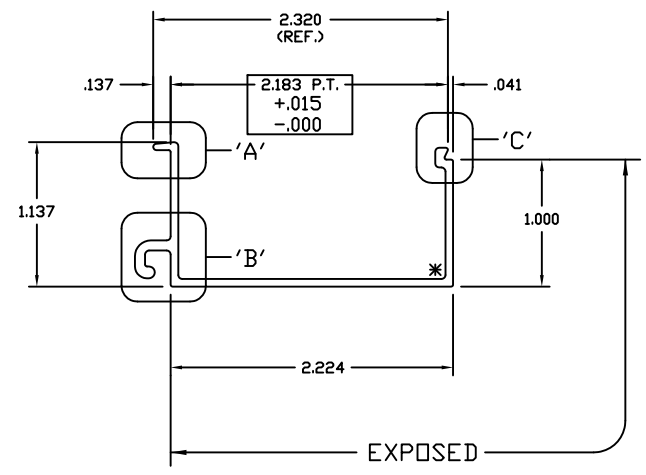
HALF SCALE ASSEMBLY

NOTES:
 MATES WITH E14300
 MATES WITH E14303



HALF SCALE ASSEMBLY

E14304



ACTUAL SIZE

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 * INDICATES .031 RADIUS
 □ DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

TUBELITE
 LEADING IN ECO-FRIENDLY OPERATING
 CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL THK.	.060	SECTION CLASS	S	MAT'L	6063-T5	RATIO	18:1
PERIMETER OUT (TOTAL)	10.073	AREA	.316	WGT/FT	.371		
FACTOR	28	CIRCLE SIZE	2.650	INFILL VOL/LINE	N/A		
RXX	.938	SXX	.215	IXX	.278	CXX	1.294
RYY	.357	SYY	.050	IYY	.040	CYY	.811

IS GLASS STOP (14000 I/D) FOR 1" GLASS
 E14000 NON THERMAL STOREFRONT

DRAWN BY	CDS	DRWG DATE	12/29/00	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	190	E14304			



Report #: B6918-116-45
 Date: 6/13/12
 Verified by: *Kristen S. Friedberger*

P1745
 A

PART No.	CUT LENGTH
P-1745	6"

OPERATION:

1. CUT TO LENGTH FROM E-4543

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 DENOTES CRITICAL DIMENSION



3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	07/21/94	Release to Production per ED 1929	TPB
	12/01/94	Revise from 4" to 6" and Release to production per ED 1977	KMH
A	12/12/02	Updated to P-Part Titleblock	DMT

Snap In Anchor Support

DRAWN BY TB	DRWG DATE 07/21/94	APPV,D BY	DATE APPV'D	REV
DRWG SCALE None	PRODUCT CODE 110	P1745		A

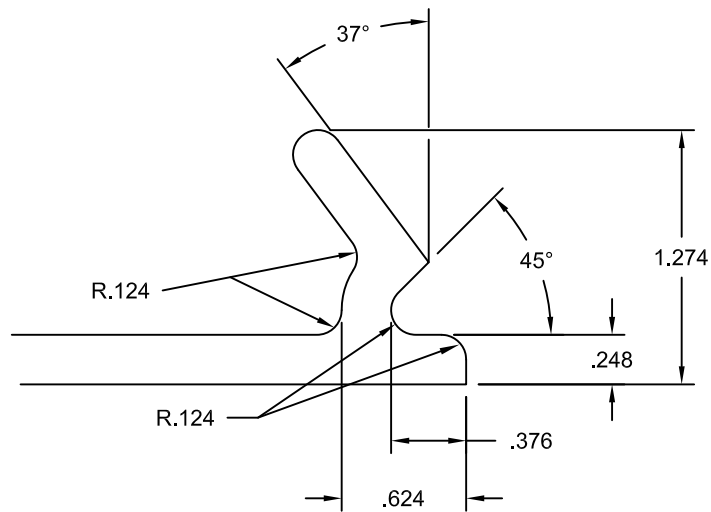
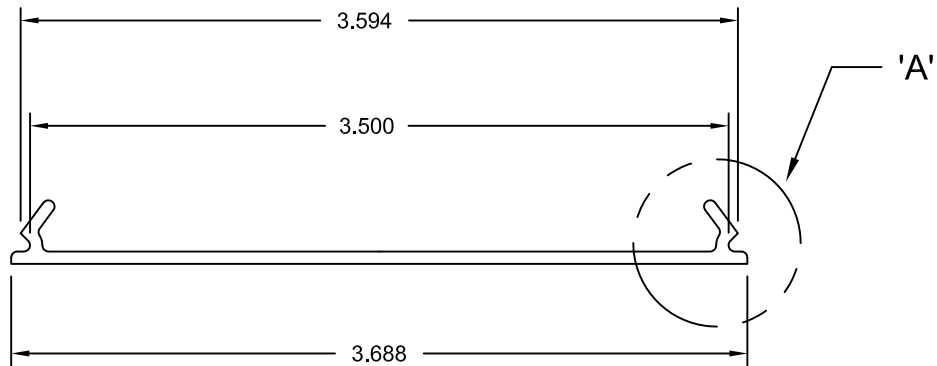


Report #: B6918-116-45

Date: 6/13/12

Architectural Testing Verified by: *Kristen P. Fiedlsberger*

P4543



DETAIL 'A'
4X SIZE

TYPICAL WALL THICKNESS = .062
10' LENGTHS
PURCHASED FROM CENTRAL PLASTICS, INC.

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ALL UNSPECIFIED RADII .015

* INDICATES .031 RADIUS

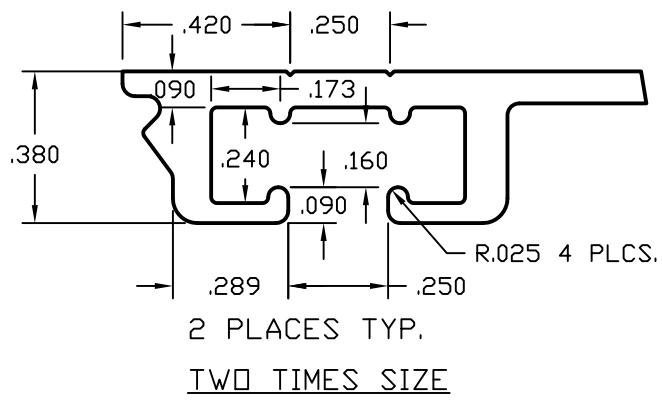
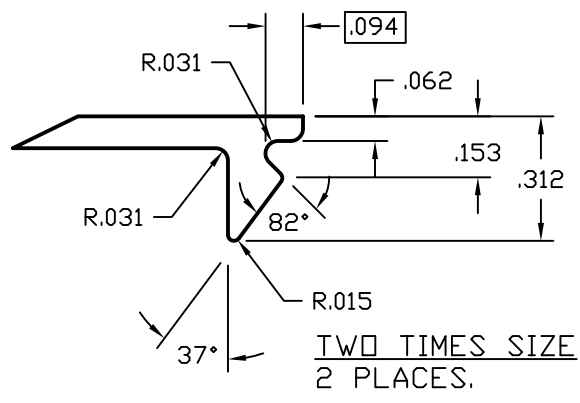
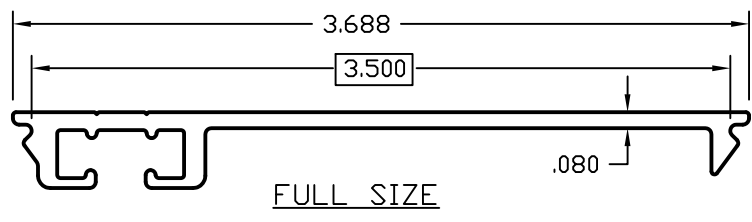
DENOTES CRITICAL DIMENSION



3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	05/29/02	RELEASE FOR PRODUCTION - ER060201	SRD
	06/11/08	MADE OBSOLETE PER - ER060802	NIK
	10/21/09	REINSTATED PER ER -	JEM

FLAT SNAP IN FILLER RIGID PVC PERIMETER CAULK BACKER			
DRAWN BY: SRD	DRWG DATE: 04/05/02	APPV,D BY:	DATE APPV'D:
DRWG SCALE: NOTED	PRODUCT CODE: 160	P4543	
			REV



POURED AND DEBRIDGE - FULL
THERE ARE NO EXPOSED SURFACES

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

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

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	SYX	.015	IYY	.004	CYY	.286

THERMALLY BROKEN FLAT CLOSER PLATE
THERMAL DOOR

DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

REV	DATE	DESCRIPTION	INTL
02-10-08	RELEASE FOR PRODUCTION		NIK
04-01-08	RELEASE FOR PRODUCTION		NIK
A	04-28-08	REMOVED AZOBRATED NOTE	NIK

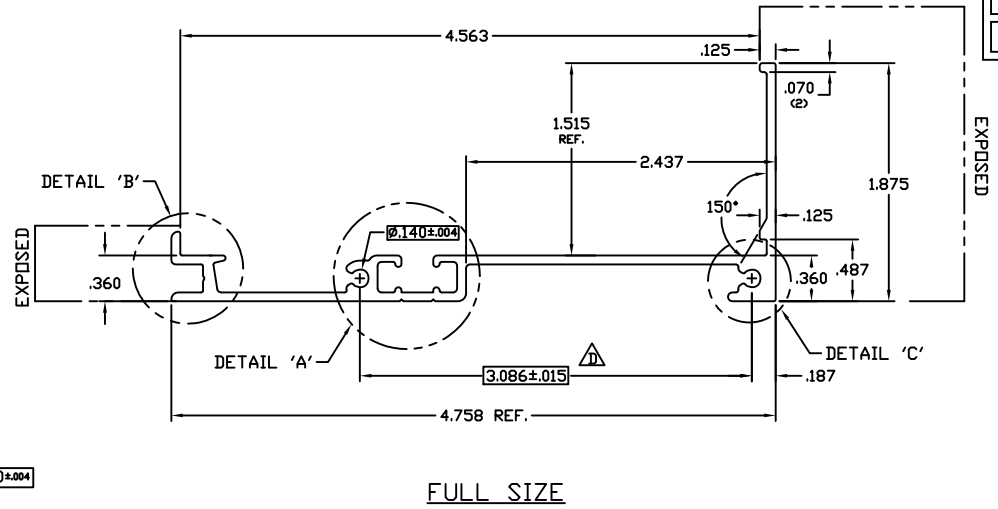
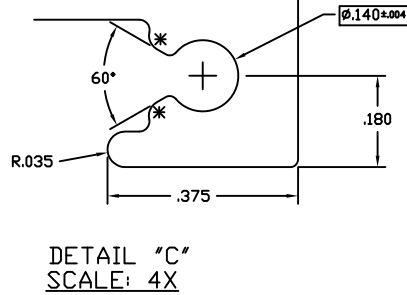
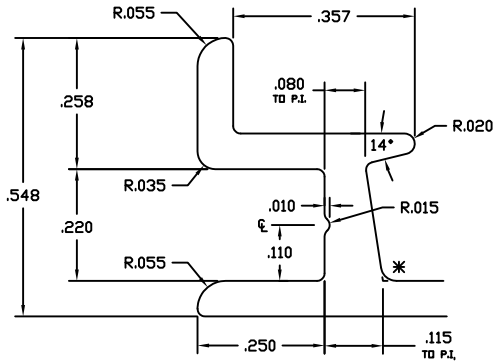
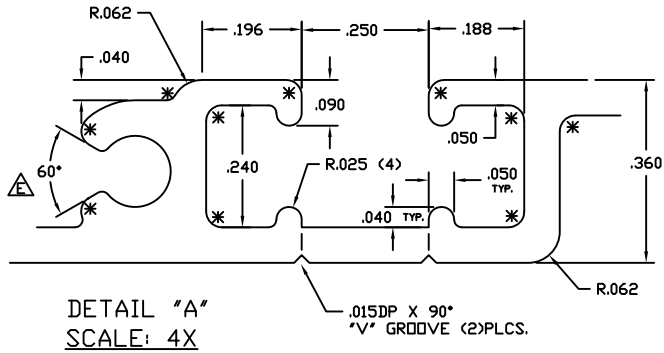
DRAWN BY	NIK	DRWG DATE	02/18/08	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	111	E6251		REV	A



Report #: B6918-116-45

Date: 6/13/12

Verified by: *Liquidator R. Luedersberger*



INDICATES CRITICAL DIMENSION

LANCED AND FULLY DEBRIDGE

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ALL DIES PROPERTY OF TUBELITE

TUBELITE
SUPERDUAL II
LEADING IN ECO-FRIENDLY OPERATING CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

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**

REV	DATE	DESCRIPTION	INTL
	04/01/93	RELEASE TO TOOLING	REV
	04/09/93	REV'D WALL THK, CALCS & RE-RELEASE TO TOOLING	REV
	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/LD CAVITY FOR AZOBRIDE	JEM
D	07/30/09	REVISED P/LD CAVITY FOR LANCER, ADDED SCREW BOSSES	CRH

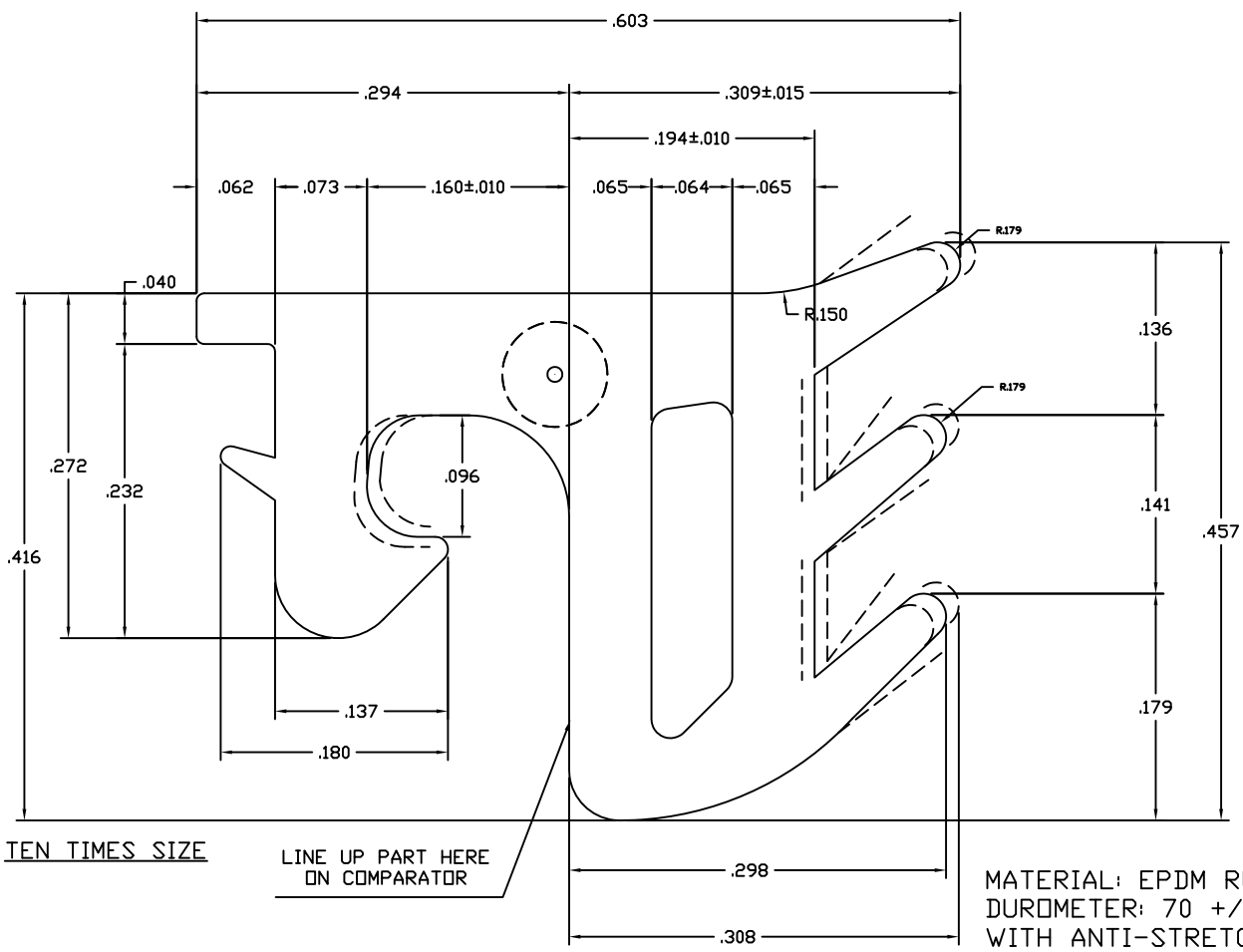
DRAWN BY	KMH	DRWG DATE	03/11/93	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	190			E14259	E

REV	DATE	DESCRIPTION	INTL
E	10/02/09	REVISED DETAIL "B", ROTATED SCREW BOSS, WAS E908J06	CRH

E14259

E

EXPOSED



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



ALL TOLERANCES ARE RMA CLASS II UNLESS OTHERWISE NOTED

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 □ DENOTES CRITICAL DIMENSION

TUBELITE
 DEPENDABLE
 LEADING IN HIGH EFFICIENCY STEELFRONT, CLUTCHWELL AND ENTRANCE SYSTEMS
 3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

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

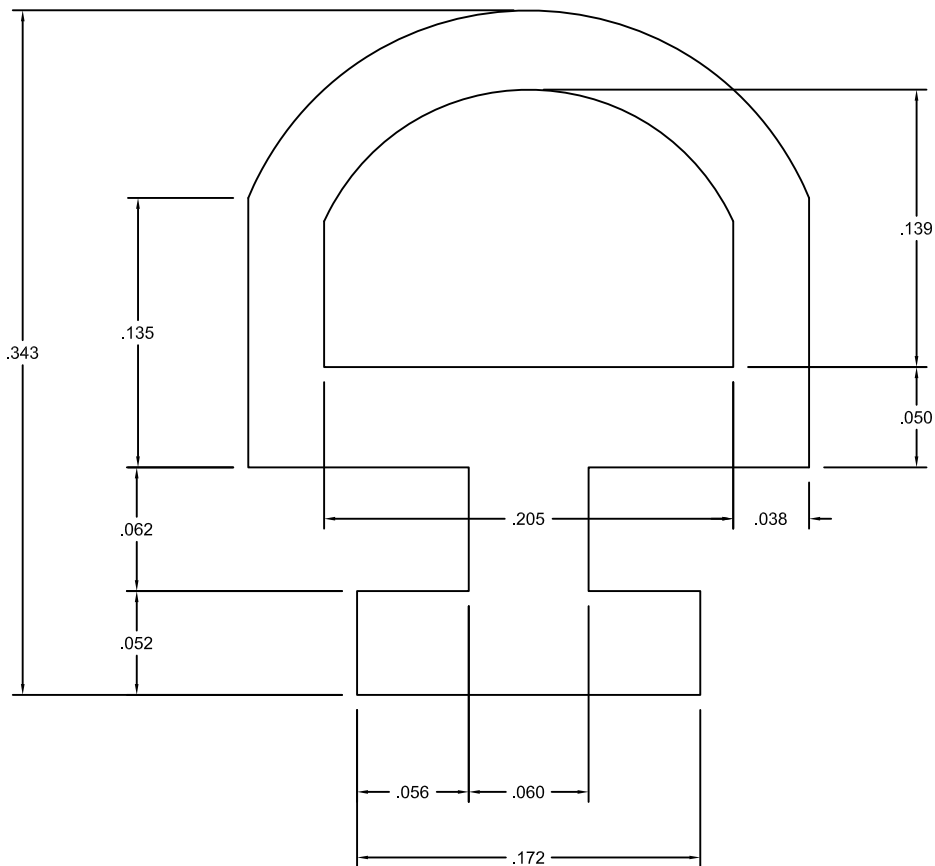
ROLL-IN GLAZING GASKET
 14000 AND 4500 STOREFRONT SYSTEMS

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



Report #: B6918-116-45
 Date: 6/13/12
 Verified by: *Kristen S. Luedtke*

P2511



TEN TIMES SIZE



ACTUAL SIZE

70 DUROMETER BLACK EPDM W/SILICONE EMULSION

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* INDICATES .031 RADIUS

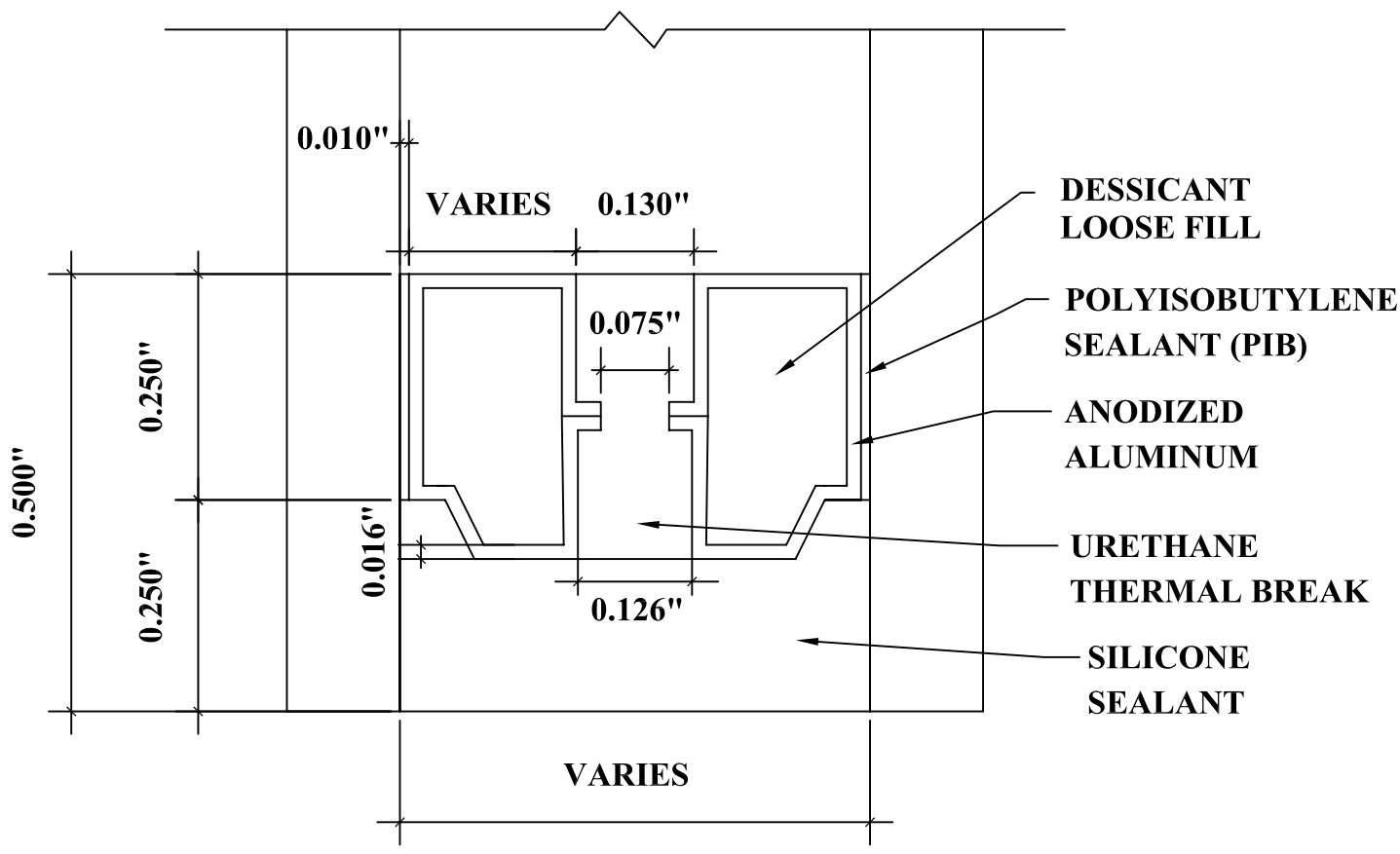
DENOTES CRITICAL DIMENSION

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

3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

REV	DATE	DESCRIPTION	INTL
	03/01/07	RELEASED FOR PRODUCTION	NIK

RECEPTOR BULB GASKET 500 FT/ROLL			
DRAWN BY NIK	DRWG DATE 03/01/07	APPV,D BY	DATE APPV'D
DRWG SCALE 10X	PRODUCT CODE 180	P2511	
			REV



DETAIL FOR THERMAL MODELING OF AZON WARM-LIGHT SPACER (A2-D)