

AAMA 507-12 THERMAL PERFORMANCE REPORT

Rendered to:

TUBELITE, INC.

SERIES/MODEL: T24000 Storefront

TYPE: Glazed Wall System

Report No: C5867.01-116-45
Report Date: 05/03/13

AAMA 507-12 THERMAL PERFORMANCE REPORT

Rendered to:

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

Report No: C5867.01-116-45
Report Date: 05/03/13
Simulation Date: 05/03/13

Project Summary:

Architectural Testing, Inc. was contracted by Tubelite, Inc. to provide U-Factor and Solar Heat Gain Coefficient thermal performance ratings on the T24000 Storefront Glazed Wall System. The thermal performance ratings were determined in accordance with AAMA 507-12, Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Building.

Reference Documents:

AAMA 507-12, Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Buildings

NFRC 100-2010, *Procedure for Determining Fenestration Product U-Factors*

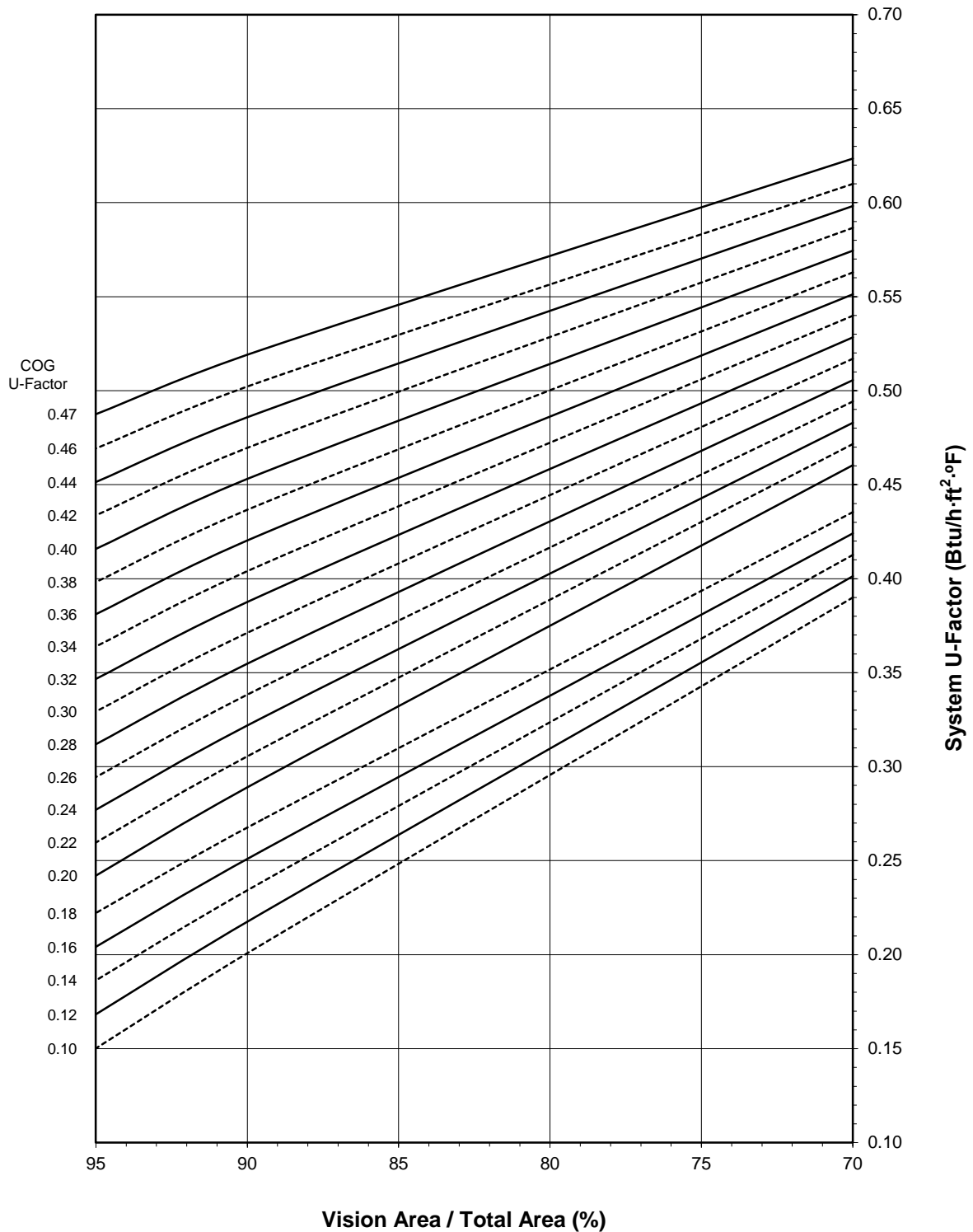
NFRC 200-2010, *Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*

Simulation Specimen Description:

Series/Model: T24000 Storefront
Type: Glazed Wall System
Frame Material: Aluminum Thermally Broken Framing System
Material Finish: Painted Aluminum
Specimen Size: 2000mm wide by 2000mm high (78-3/4" by 78-3/4")
Configuration: Two vision lites separated by one intermediate vertical
Drawing Reference: T24000 THERMAL & ACOUSTIC TEST SPECIMENS 1-3, dated

Tubelite, Inc.
T24000 Storefront - Glazed Wall System

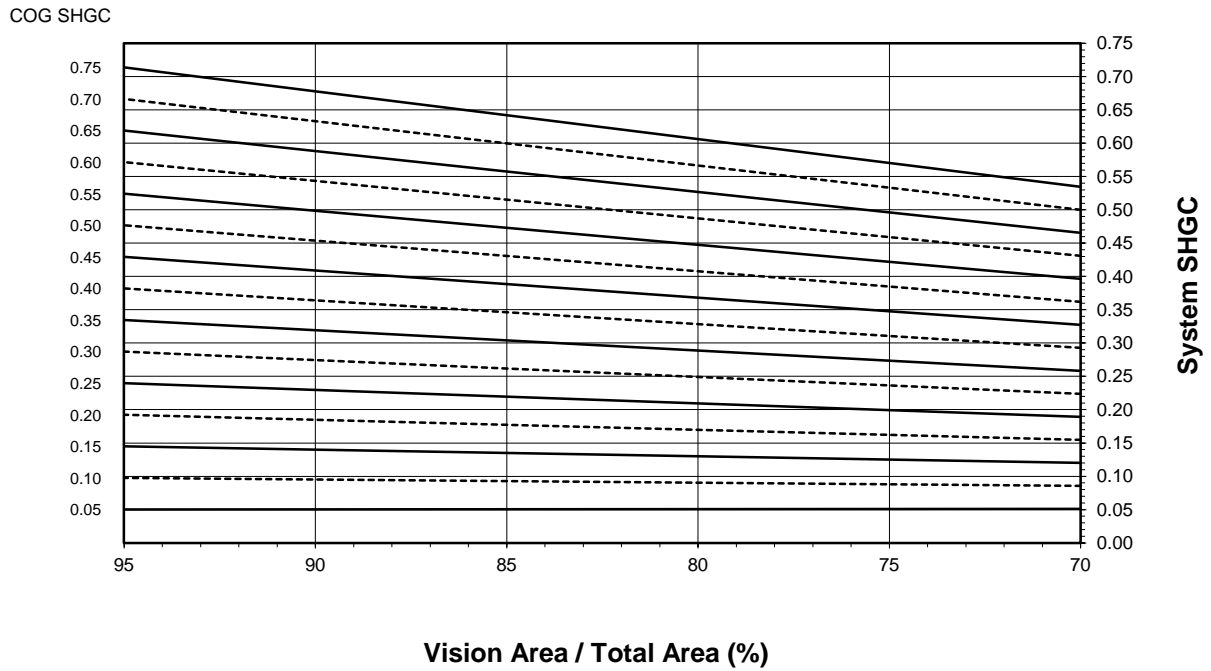
System U-Factor vs. Percentage of Vision Area



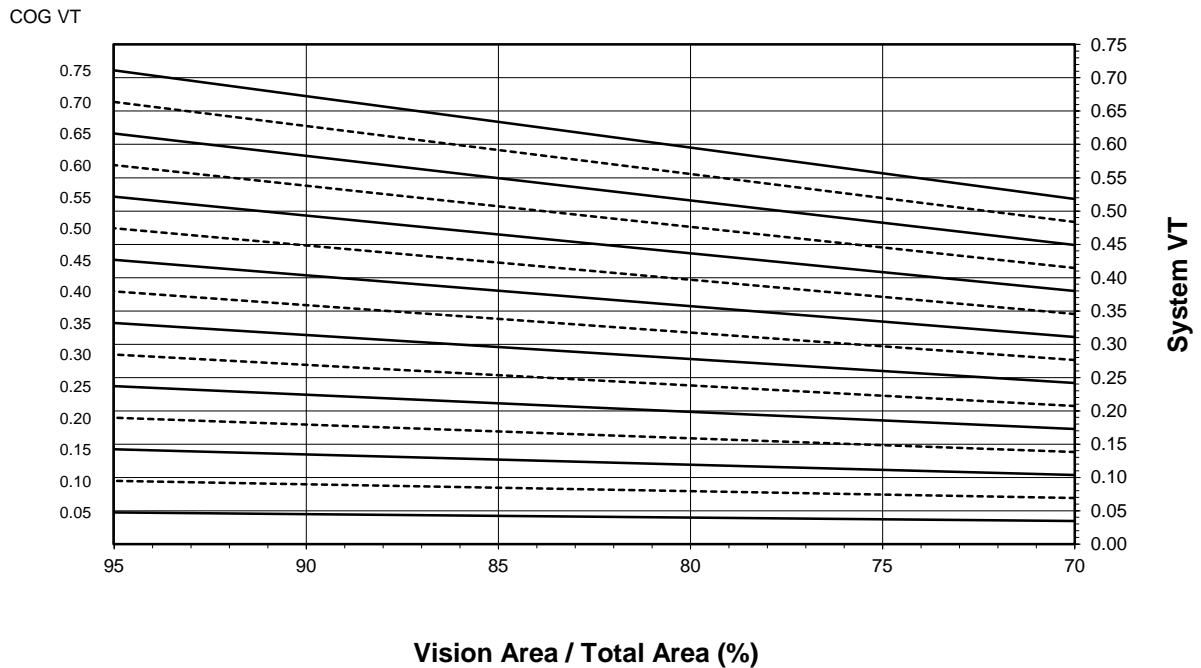
Note: 1 inch Overall - Dual Glazed Glass (0.47-0.20 COG) with Aluminum Spacer, Dual Glazed Glass with Heat Mirror (0.18-0.10 COG) with Aluminum Spacer

Tubelite, Inc.
T24000 Storefront - Glazed Wall System

System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



Tubelite, Inc.
T24000 Storefront - Glazed Wall System

Size Specific U-Factor Matrix*

Glazing Option	Center of Glass U-Factor	Overall U-Factor
1	0.48	0.52
2	0.46	0.51
3	0.44	0.49
4	0.42	0.47
5	0.40	0.46
6	0.38	0.44
7	0.36	0.42
8	0.34	0.41
9	0.32	0.39
10	0.30	0.38
11	0.28	0.36
12	0.26	0.34
13	0.24	0.33
14	0.22	0.31
15	0.20	0.29
16	0.18	0.27
17	0.16	0.26
18	0.14	0.24
19	0.12	0.22
20	0.10	0.21

Note: 1 inch Overall - Dual Glazed Glass (0.47-0.20 COG) with Aluminum Spacer, Dual Glazed Glass with Heat Mirror (0.18-0.10 COG) with Aluminum Spacer

Tubelite, Inc.
T24000 Storefront - Glazed Wall System

Size Specific SHGC Matrix*

Center of Glass SHGC	Overall SHGC
0.75	0.67
0.70	0.63
0.65	0.59
0.60	0.54
0.55	0.50
0.50	0.45
0.45	0.41
0.40	0.36
0.35	0.32
0.30	0.27
0.25	0.23
0.20	0.18
0.15	0.14
0.10	0.09
0.05	0.05

Size Specific VT Matrix*

Center of Glass VT	Overall VT
0.75	0.67
0.70	0.62
0.65	0.58
0.60	0.53
0.55	0.49
0.50	0.45
0.45	0.40
0.40	0.36
0.35	0.31
0.30	0.27
0.25	0.22
0.20	0.18
0.15	0.13
0.10	0.09
0.05	0.04

*Size Specific U-Factor, SHGC, and VT Matrices are based on the standard Glazed Wall System specimen size of 2000mm wide by 2000mm high (78-3/4" by 78-3/4"). This represents 89.5% Vision Area / Total Area.

Vision Area Data

Option No.	COG U-Factor	COG Temperature	Cross Section	Frame Height	Frame U-Factor	Edge U-Factor	Total Product U-Factor		
							70% Vision Area	NFRC 100-2010	95% Vision Area
							26.02" by 26.02"	78.74" by 78.74"	167.68" by 167.68"
1	0.47	44.1	Head	2.0485	0.9036	0.5106	0.6235	0.5219	0.4875
			L. Jamb	1.1270	0.8547	0.5106			
			R. Jamb	0.9697	0.9704	0.5106			
			Mullion	2.0967	0.9082	0.5106			
			Sill	2.5481	0.8759	0.5106			
2	0.46	44.8	Head	2.0485	0.8945	0.4967	0.6100	0.5051	0.4693
			L. Jamb	1.1270	0.8458	0.4967			
			R. Jamb	0.9697	0.9607	0.4967			
			Mullion	2.0967	0.8989	0.4967			
			Sill	2.5481	0.8755	0.4967			
3	0.44	45.8	Head	2.0485	0.8940	0.4831	0.5982	0.4888	0.4515
			L. Jamb	1.1270	0.8440	0.4831			
			R. Jamb	0.9697	0.9590	0.4831			
			Mullion	2.0967	0.8972	0.4831			
			Sill	2.5481	0.8752	0.4831			
4	0.42	46.8	Head	2.0485	0.8936	0.4698	0.5866	0.4727	0.4337
			L. Jamb	1.1270	0.8424	0.4698			
			R. Jamb	0.9697	0.9575	0.4698			
			Mullion	2.0967	0.8956	0.4698			
			Sill	2.5481	0.8749	0.4698			
5	0.40	47.9	Head	2.0485	0.8932	0.4561	0.5745	0.4563	0.4159
			L. Jamb	1.1270	0.8407	0.4561			
			R. Jamb	0.9697	0.9559	0.4561			
			Mullion	2.0967	0.8940	0.4561			
			Sill	2.5481	0.8705	0.4561			
6	0.38	48.9	Head	2.0485	0.8929	0.4429	0.5629	0.4400	0.3982
			L. Jamb	1.1270	0.8392	0.4429			
			R. Jamb	0.9697	0.9545	0.4429			
			Mullion	2.0967	0.8925	0.4429			
			Sill	2.5481	0.8702	0.4429			
7	0.36	50.0	Head	2.0485	0.8925	0.4294	0.5513	0.4238	0.3811
			L. Jamb	1.1270	0.8374	0.4294			
			R. Jamb	0.9697	0.9528	0.4294			
			Mullion	2.0967	0.8908	0.4294			
			Sill	2.5481	0.8700	0.4294			
8	0.34	51.0	Head	2.0485	0.8922	0.4163	0.5399	0.4076	0.3640
			L. Jamb	1.1270	0.8361	0.4163			
			R. Jamb	0.9697	0.9517	0.4163			
			Mullion	2.0967	0.8896	0.4163			
			Sill	2.5481	0.8698	0.4163			
9	0.32	52.0	Head	2.0485	0.8920	0.4030	0.5284	0.3913	0.3467
			L. Jamb	1.1270	0.8347	0.4030			
			R. Jamb	0.9697	0.9504	0.4030			
			Mullion	2.0967	0.8882	0.4030			
			Sill	2.5481	0.8696	0.4030			

Vision Area Data

Option No.	COG U-Factor	COG Temperature	Cross Section	Frame Height	Frame U-Factor	Edge U-Factor	Total Product U-Factor		
							70% Vision Area	NFRC 100-2010	95% Vision Area
							26.02" by 26.02"	78.74" by 78.74"	167.68" by 167.68"
10	0.30	53.1	Head	2.0485	0.8917	0.3900	0.5170	0.3750	0.3294
			L. Jamb	1.1270	0.8333	0.3900			
			R. Jamb	0.9697	0.9491	0.3900			
			Mullion	2.0967	0.8869	0.3900			
			Sill	2.5481	0.8695	0.3900			
11	0.28	54.2	Head	2.0485	0.8915	0.3769	0.5056	0.3587	0.3120
			L. Jamb	1.1270	0.8320	0.3769			
			R. Jamb	0.9697	0.9480	0.3769			
			Mullion	2.0967	0.8856	0.3769			
			Sill	2.5481	0.8693	0.3769			
12	0.26	55.2	Head	2.0485	0.8912	0.3639	0.4942	0.3424	0.2945
			L. Jamb	1.1270	0.8307	0.3639			
			R. Jamb	0.9697	0.9468	0.3639			
			Mullion	2.0967	0.8844	0.3639			
			Sill	2.5481	0.8691	0.3639			
13	0.24	56.3	Head	2.0485	0.8910	0.3509	0.4829	0.3261	0.2771
			L. Jamb	1.1270	0.8294	0.3509			
			R. Jamb	0.9697	0.9457	0.3509			
			Mullion	2.0967	0.8832	0.3509			
			Sill	2.5481	0.8690	0.3509			
14	0.22	57.3	Head	2.0485	0.8909	0.3378	0.4716	0.3098	0.2597
			L. Jamb	1.1270	0.8284	0.3378			
			R. Jamb	0.9697	0.9448	0.3378			
			Mullion	2.0967	0.8822	0.3378			
			Sill	2.5481	0.8690	0.3378			
15	0.20	58.4	Head	2.0485	0.8908	0.3249	0.4604	0.2934	0.2421
			L. Jamb	1.1270	0.8272	0.3249			
			R. Jamb	0.9697	0.9439	0.3249			
			Mullion	2.0967	0.8812	0.3249			
			Sill	2.5481	0.8689	0.3249			
16	0.18	59.5	Head	2.0485	0.8734	0.3001	0.4354	0.2719	0.2222
			L. Jamb	1.1270	0.7856	0.3001			
			R. Jamb	0.9697	0.8977	0.3001			
			Mullion	2.0967	0.8374	0.3001			
			Sill	2.5481	0.8554	0.3001			
17	0.16	60.6	Head	2.0485	0.8732	0.2871	0.4241	0.2554	0.2042
			L. Jamb	1.1270	0.7841	0.2871			
			R. Jamb	0.9697	0.8964	0.2871			
			Mullion	2.0967	0.8360	0.2871			
			Sill	2.5481	0.8552	0.2871			
18	0.14	61.7	Head	2.0485	0.8736	0.2730	0.4126	0.2388	0.1864
			L. Jamb	1.1270	0.7840	0.2730			
			R. Jamb	0.9697	0.8966	0.2730			
			Mullion	2.0967	0.8361	0.2730			
			Sill	2.5481	0.8556	0.2730			

Vision Area Data

Option No.	COG U-Factor	COG Temperature	Cross Section	Frame Height	Frame U-Factor	Edge U-Factor	Total Product U-Factor		
							70% Vision Area	NFRC 100-2010	95% Vision Area
							26.02" by 26.02"	78.74" by 78.74"	167.68" by 167.68"
19	0.12	62.8	Head	2.0485	0.8735	0.2598	0.4013	0.2222	0.1683
			L. Jamb	1.1270	0.7827	0.2598			
			R. Jamb	0.9697	0.8955	0.2598			
			Mullion	2.0967	0.8349	0.2598			
			Sill	2.5481	0.8556	0.2598			
20	0.10	63.9	Head	2.0485	0.8735	0.2465	0.3900	0.2056	0.1502
			L. Jamb	1.1270	0.7816	0.2465			
			R. Jamb	0.9697	0.8946	0.2465			
			Mullion	2.0967	0.8338	0.2465			
			Sill	2.5481	0.8555	0.2465			

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 3, 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:

REVIEWED BY:

Eric S. Leitner
Simulation Technician

Kevin S. Louder
Project Engineer

ESL:ESL
C5867.01-116-45

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

Appendix A: Drawings and Bills of Material (13)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01R0	05/03/13	All	Original Report Issued to Tubelite, Inc.

All drawings and Bills of Material used in simulating this product are enclosed in this Appendix.

Appendix A

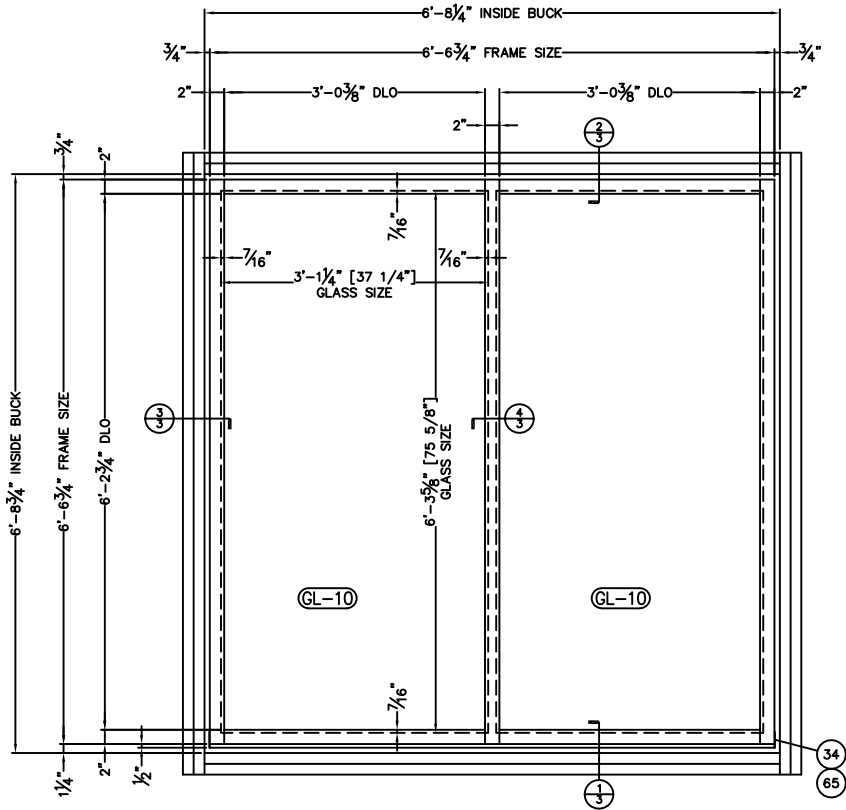
C5867.01-116-45



Report #: C5867-116-45

Date: 05/03/13

Verified by: Kristin R. Friedlschager



T24000 STOREFRONT TEST SPECIMEN 1
NON IMPACT

GLAZING NOTES:
1" GLASS ~ 1/4 TEMPERED 1/2 AIR SPACE 1/4" TEMPERED
DRY GLAZED

TUBELITE
NON IMPACT
T24000 STOREFRONT
THERMAL & ACOUSTIC TESTING

TUBELITE
DEPENDABLE
LEADERS IN COEFFICIENT STOREFRONT,
CURTAINWALL, AND ENTRANCE SYSTEMS
3056 WALKER RIDGE DRIVE N.W.
WALKER, MICHIGAN 49544
PH: 800.866.2227
FX: 616.301.0008
WEB SITE: WWW.TUBELITEINC.COM

REVISIONS	
NO.	DESCRIPTION

DATED	LATEST RELEASE
1-07-13	1-18-13

DRAWINGS BY: HLP
ENGINEERED BY:

TEST ELEVATION

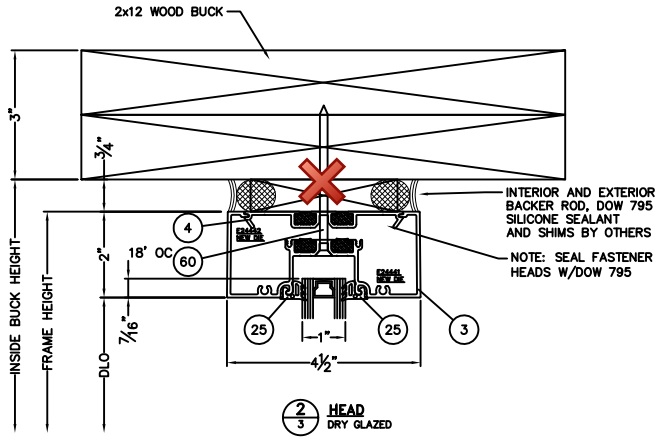
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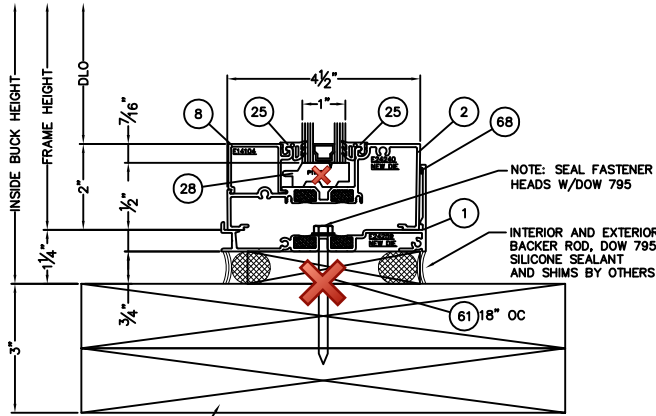
Report #: C5867-116-45

Date: 05/03/13

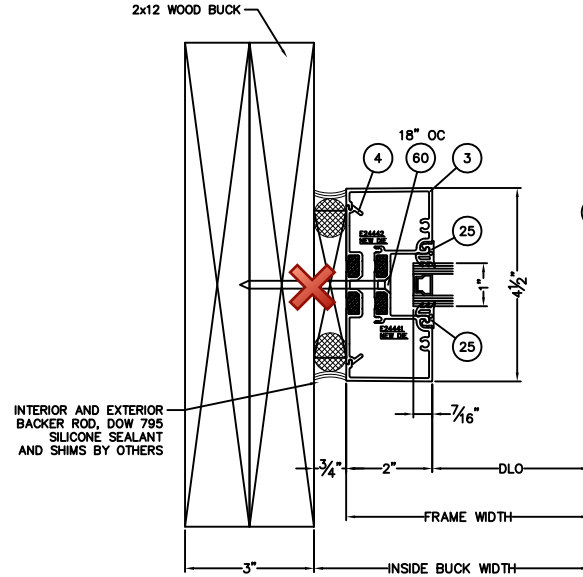
Verified by: *Kristen R. Fuchsberger*



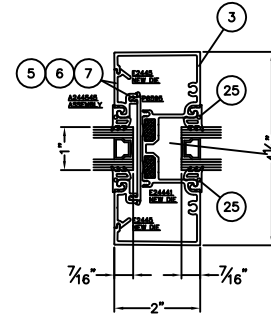
2
3 HEAD
DRY GLAZED



1
3 SILL
DRY GLAZED



3
3 JAMB
DRY GLAZED



4
3 TYPICAL MULL
DRY GLAZED

TUBELITE
NON IMPACT
T24000 STOREFRONT
THERMAL & ACOUSTIC TESTING

TUBELITE
DEPENDABLE
LEADERS IN CO-EFFICIENT STOREFRONT,
CURTAINWALL, AND ENTRANCE SYSTEMS
3056 WALKER RIDGE DRIVE N.W.
WALKER, MICHIGAN 49544
PH: 800.866.2227
FX: 616.301.0008
WEB SITE: WWW.TUBELITEINC.COM

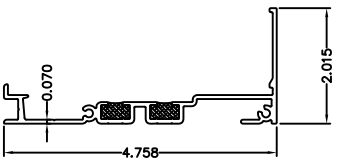
NO.	DATE	BY	DESCRIPTION

DATED	LATEST RELEASE
1-07-13	1-18-13

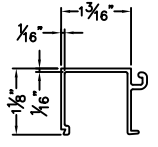
DRAWINGS BY: HLP
ENGINEERED BY:

TEST ELEVATION

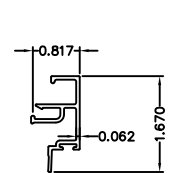
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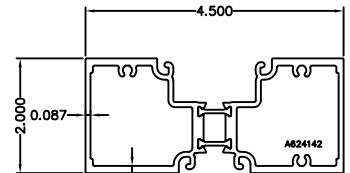
ITEM 1-E24259
THERMAL SUB SILL



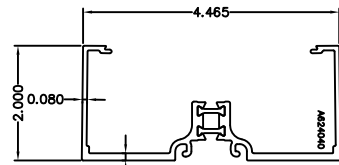
ITEM 8-E14104
GLAZING STOP



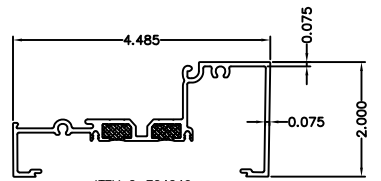
ITEM 18-E6223
INNER DOOR STOP



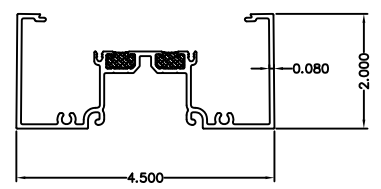
ITEM 19-A624142
DOOR HEADER



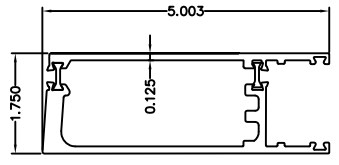
ITEM 20-A624040
DOOR JAMB



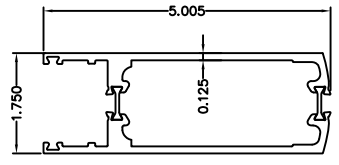
ITEM 2-E24240
OPEN BACK SILL



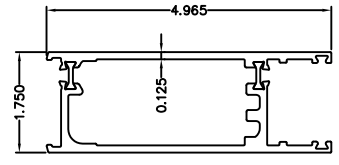
ITEM 3-E24441
THERMAL OPEN BACK HEAD/JAMB/VERTICAL



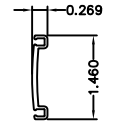
ITEM 11 - A627879
ASSEMBLY
MED STILE - HINGE



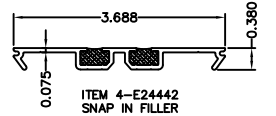
ITEM 12 - A628282
ASSEMBLY
MED RD FACE STILE



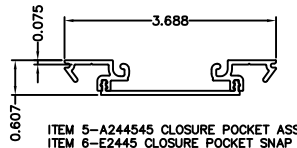
ITEM 13 - A628384
ASSEMBLY
MED STILE - LOCK W/ASTRAGAL



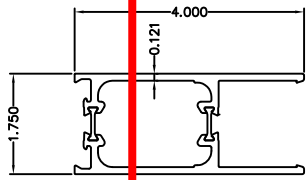
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ASTRAGAL



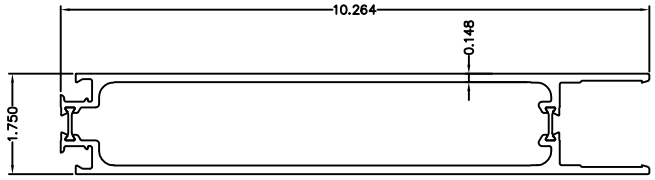
ITEM 4-E24442
SNAP IN FILLER



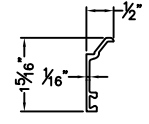
ITEM 5-A244545 CLOSURE POCKET ASSEMBLY
ITEM 6-E2445 CLOSURE POCKET SNAP
ITEM 7-P6595 BRIDGE (PLASTIC)



ITEM 15 - A621414
ASSEMBLY
MED STILE TOP RAIL



ITEM 16 - A621010
ASSEMBLY
BOTTOM RAIL



ITEM 17 -E6291
GLAZING STOP

TUBELITE
NON IMPACT
T24000 STOREFRONT
THERMAL & ACOUSTIC TESTING

TUBELITE®
DEPENDABLE
LEAKS INCOEFFICIENT STORMWIND
CURTAINWALL AND ENTRANCE SYSTEMS
 3056 WALKER RIDGE DRIVE N.W.
 WALKER, MICHIGAN 49544
 PH: 800.866.2227
 FX: 616.301.0008
 WEB SITE: WWW.TUBELITEINC.COM

REVISIONS	
NO.	DESCRIPTION

DATED 1-07-13 LATEST RELEASE 1-18-13

DRAWINGS BY: HLP
ENGINEERED BY:

TEST ELEVATION

5.0

5 OF 6

NON-IMPACT STOREFRONT TEST SPECIMEN - PARTS LIST				MATERIAL
ITEM	QTY	PART NUMBER	DESCRIPTION	
1	1	E24259	EXTRUSION ~ THERMAL SUB SILL	ALUMINUM-6063-T5
2	2	E24240	EXTRUSION ~ THERMAL OPEN BACK SILL	ALUMINUM-6063-T5
3	5	E24441	EXTRUSION ~ THERMAL HEAD/JAMB/VERTICAL	ALUMINUM-6063-T5
4	8	E24442	EXTRUSION ~ SNAP IN FILLER	ALUMINUM-6063-T5
5	1	A244545	CLOSURE POCKET ASSEMBLY	
6	2 PER ASSY	E24445	EXTRUSION ~ CLOSURE POCKET SNAP END 12'-2"	ALUMINUM-6063-T5
7	1 PER ASSY	P6595	BRIDGE 12'-2"	P-PART-PLASTIC
8	2	E14104	EXTRUSION ~ GLAZING STOP	ALUMINUM-6063-T5
10				
11	4	A627879	EXTRUSION ASSEMBLY ~ STILE MED ~ HINGE	ALUMINUM-6063-T5
12	1	A628282	EXTRUSION ASSEMBLY ~ STILE, MED ~ RD FACE	ALUMINUM-6063-T5
13	1	A628384	EXTRUSION ASSEMBLY ~ STILE, MED ~ LOCK/ASTRICAL	ALUMINUM-6063-T5
14	1	E1152	EXTRUSION ~ ASTRICAL (DOOR)	ALUMINUM-6063-T5
15	3	A621414	EXTRUSION ASSEMBLY ~ TOP RAIL 4"	ALUMINUM-6063-T5
16	3	A621010	EXTRUSION ASSEMBLY ~ BOTTOM RAIL 10"	ALUMINUM-6063-T5
17	12	E6291	EXTRUSION ~ GLASS STOP TOP & BOTTOM RAIL	ALUMINUM-6063-T5
18	6	E6223	EXTRUSION ~ INNER DOOR STOP	ALUMINUM-6063-T5
19	2	A624142	EXTRUSION ASSEMBLY ~ DOOR FRAME ~ HEADER	ALUMINUM-6063-T5
20	4	A624040	EXTRUSION ASSEMBLY ~ DOOR FRAME ~ JAMB	ALUMINUM-6063-T5
21	2	T6250	THERMAL THRESHOLD	ALUMINUM-6063-T5
22				
23				
24				
25	80'	P2728	GASKET, GLASS, EPG	P-PART-RUBBER
26	50'	P1112	GASKET, GLASS, EPG (DOOR)	P-PART-RUBBER
27	50'	P2183	GASKET, GLASS, EPG (DOOR)	P-PART-RUBBER
28	6	P1132	SETTING BLOCK 4" LG	P-PART-RUBBER
29	6	P1912	SETTING BLOCK 1/4 x 1/2 x 4" LG	P-PART-RUBBER
30	40'	P6296	BULB WEATHERSEAL	P-PART-WEATHERSEAL
31	20'	P938	PILE, DOOR STOP, AMESBURY GROUP	P-PART-PLASTIC/FAB
32	3	P6240	ELEMENT INHIBITOR (TOP & BOTTOM RAIL)	P-PART-RIGID PVC
33	3	P1276	CONCEALED SCREW WEATHERSTRIP 41 7/8" LG	P-PART-WEATHERSTRIP
34	2	P65XX	END DAM FOR SUB SILL E24259	P-PART-ALUM .040 SH.
35				
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DOOR PARTS AS REQ'D

ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL
60	50	NA	SCREW ~ 12-11 x 3 1/2" FH WOOD (FRAME TO BUICK)	P-PART-FASTENER
61	8	NA	SCREW ~ 1/4" x 3" HEX FLG HD GALV LAG (FR. TO WOOD SUBSTRATE)	P-PART-FASTENER
62	10	NA	SCREW ~ 12-1" x 2" FT HD WOOD (THRES. TO WOOD BUICK)	P-PART-FASTENER
63	75	S070	SCREW ~ #12-24 x 1/2" FLAT HD PHIL (HINGE)	P-PART-FASTENER
64	50	S341	SCREW ~ #10-24 x 3/4" FLAT HD PHIL (ASTRAGAL)	P-PART-FASTENER
65	4	S196	SCREW ~ #8 X 3/8" SELF TAPPING PAN HEAD (END DAM TO SUB SILL)	P-PART-FASTENER
66	30	S202	SCREW ~ #10-24 x1 TYPE 23 HEX HEAD PHIL (FRAME TO FRAME)	P-PART-FASTENER
67				
68	AS REQ'D	BY OTHERS	SILICONE SEALANT DOW 795	P-PART-SEALANT
69				
70				
71	1	NA	3'-4" x 7'-2" MEDIUM STILE THERMAL DOOR	DOOR ASSEMBLY
72	1	NA	6'-4" x 7'-2" MEDIUM STILE THERMAL DOOR	DOOR ASSEMBLY
73	X	P518	LABEL, DOOR, GREEN BRUSHED SILVER (DOOR) (NOT SHOWN)	P-PART-LABEL
74	X	P1539	SPRING, STEEL ASTRAGAL, ADJUSTABLE, (DOOR)	P-PART-HARDWARE
75	X	P1553	WASHER, SCREW & SHOULDER SCREW (DOOR) (NOT SHOWN)	P-PART-FASTENER
76	X	S071	NUT, STUD, 3/8-16 X 3/8 (DOOR TIE ROD) (NOT SHOWN)	P-PART - FASTENER
77	X	S186	WASHER, 1/2 OD X 1/2 ID X .062 ALUMINUM (DOOR) (NOT SHOWN)	P-PART - FASTENER
78	X	S161	SCREW, 10-24 X 1/2 FLAT HEAD PHIL (DR HINGE/FLUSH BOLTS) (NOT SHOWN)	P-PART - FASTENER
79	X	P908	SCREW, 10-24 X 1/2 FH MACH PHIL (DOOR) (NOT SHOWN)	P-PART - FASTENER
80	X	P0208	ROD, THREADED TIE, 1/2" (DOOR) (NOT SHOWN)	P-PART - FASTENER
81	X	P676	TAB - FOR MORTISED LOCKS (DOOR) (NOT SHOWN)	P-PART - HARDWARE
82	X	P853	WASHER, DOOR ROD (DOOR) (NOT SHOWN)	P-PART - HARDWARE
83	9	P2092	HINGE, BUTT, REINFORCEMENT (DOOR)	P-PART - HARDWARE
84	9	P092	BUTT HINGE HAGAR BB-1191	P-PART - HARDWARE
85				
86				
87	X	P572	CYLINDER PARTS, P572-C2 (DOOR)	P-PART - HARDWARE
88	X	P1825	M-SR-SR28 COLLAR, SPLIT RING CYL RYADON (DOOR)	P-PART - HARDWARE
89	X	P6508	ADAMS-RITE MS1853S-410-000 ADAMS-TITE (DOOR)	P-PART - HARDWARE
90	X	P1750	HEADER BOLT, ADAM-RITE P1750-OR (DOOR)	P-PART - HARDWARE
91	X	P571	CYLINDER, LOCK (DOOR)	P-PART - HARDWARE
92	X	P2201	CLOSER, DORMA, 8616, SURFACE MOUNT	P-PART - HARDWARE
93	X	P1420	DEAD BOLT	P-PART - HARDWARE
94	X	P059	FLUSH BOLTS	P-PART - HARDWARE
95	X	P6527	ROCKWOOD BF157 10" PULL	P-PART - HARDWARE
96				
97				
98				
99				

TUBELITE
 NON IMPACT
 T24000 STOREFRONT
 THERMAL & ACOUSTIC TESTING

TUBELITE
 LEAKS IN EFFICIENT STOREFRONT
 CURTAINWALL AND ENTRANCE SYSTEMS
 3056 WALKER RIDGE DRIVE N.W.
 WALKER, MICHIGAN 49544
 PH: 800.866.2227
 FX: 616.301.0008
 WEB SITE: WWW.TUBELITEINC.COM

NO.	DATE	BY	DESCRIPTION

DATED 1-07-13 LATEST RELEASE 1-18-13
 DRAWINGS BY: HLP
 ENGINEERED BY:
 TEST ELEVATION

6.0

6 OF 6

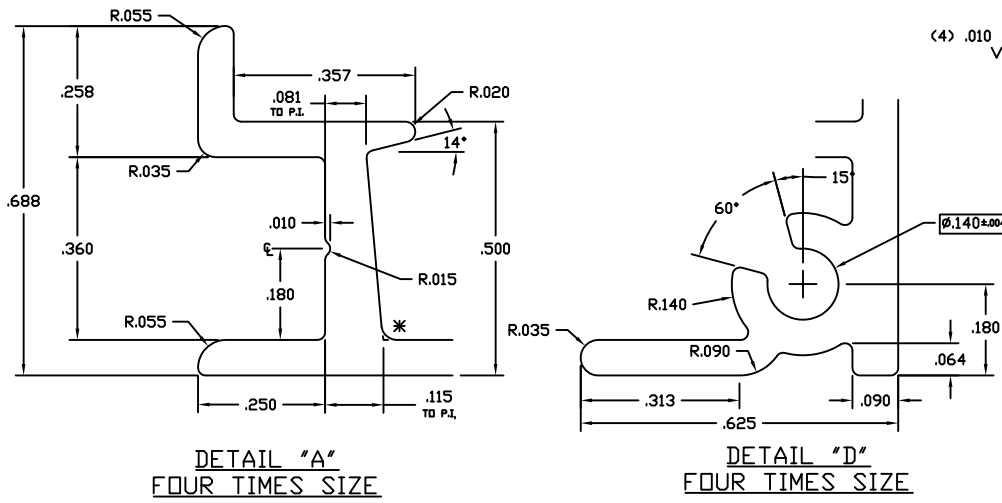
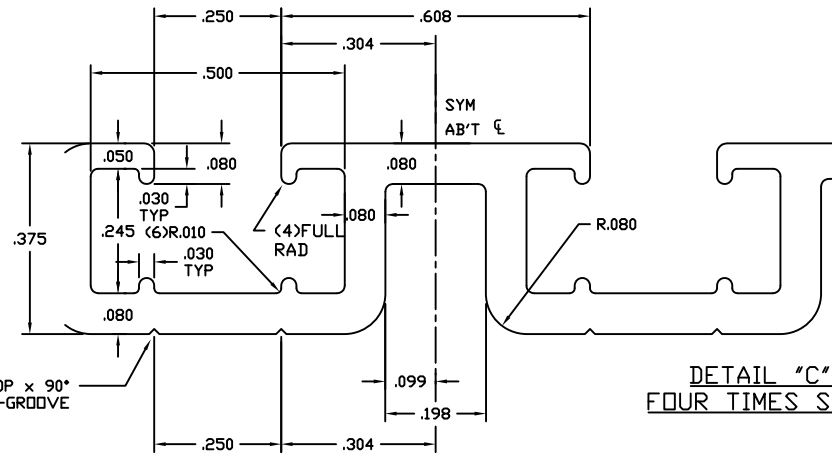
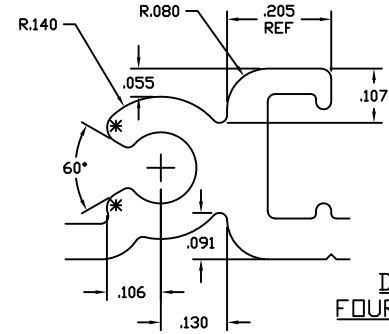
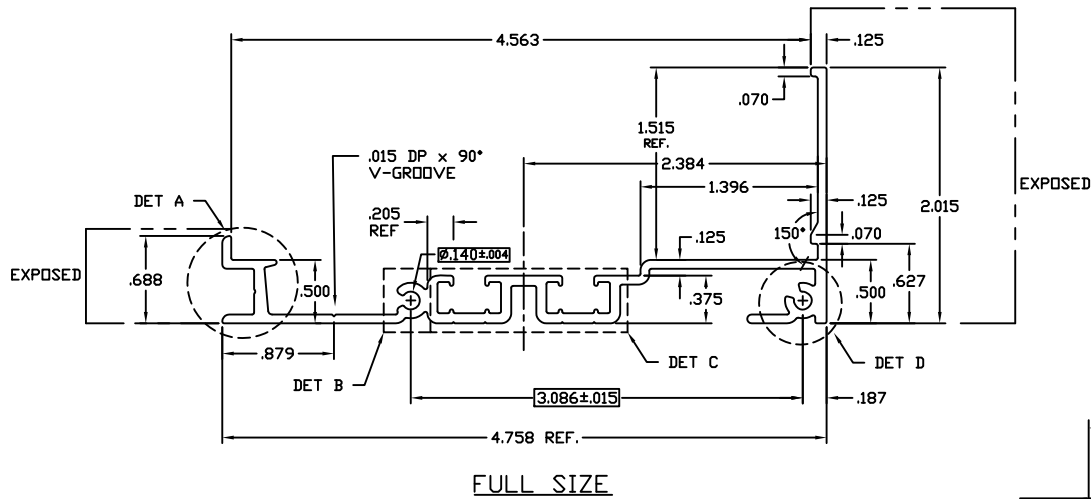


Report #: C5867-116-45

Date: 05/03/13

Verified by: Kristin R. Heideberger

E24259



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

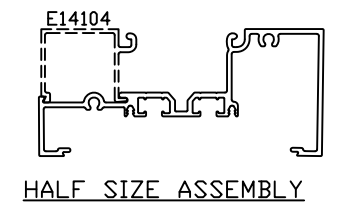
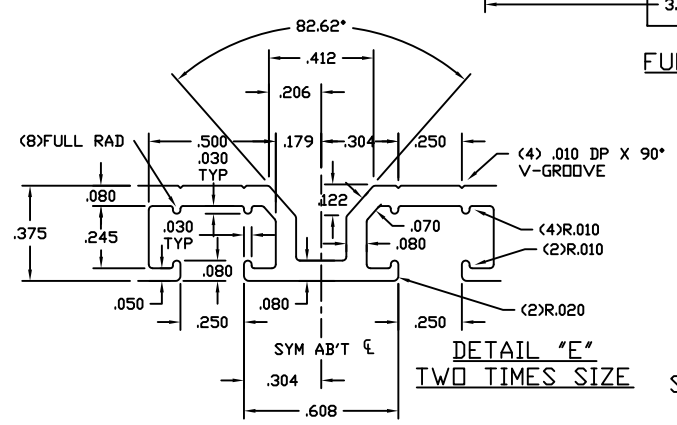
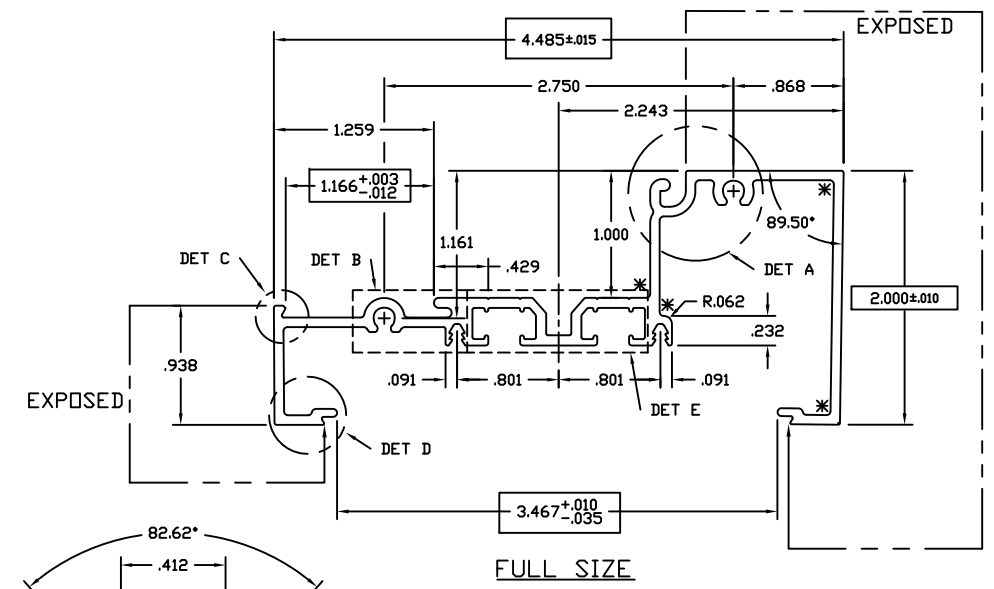
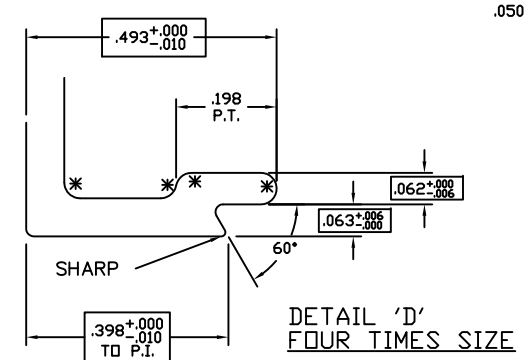
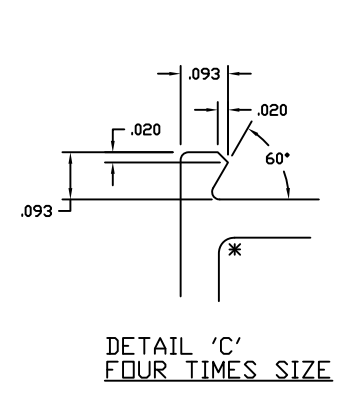
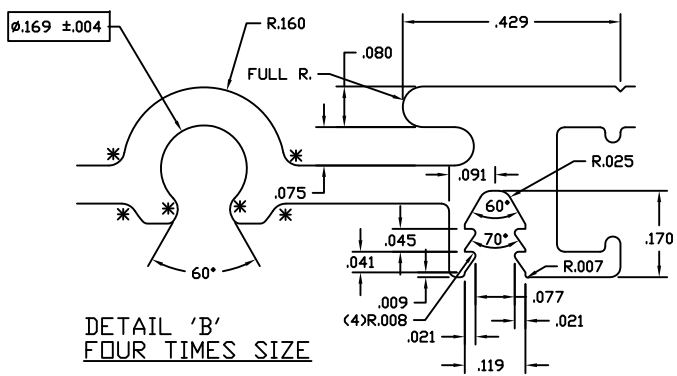
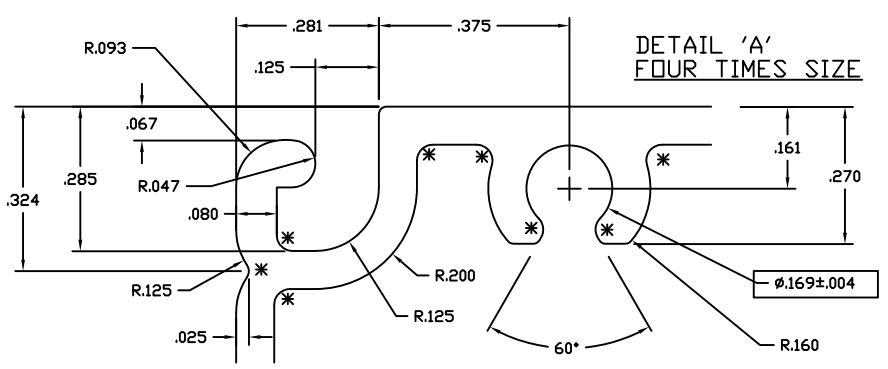
3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

WALL THK	0.070	SECTION CLASS	S	MAT'L	6063-T5	RATIO	70:1
PERIMETER (OUT TOTAL)	20.965	AREA	.785	WGT/FT	.923		
FACTOR	23	CIRCLE SIZE	5.157	INFILL VOLUME	.263		
RXX	1.601	SXX	.726	IXX	2.012	CXX	2.771
RYY	.436	SYY	.091	IYY	.149	CYY	1.642

SILL FLASHING
T24000 THERMAL STOREFRONT

DRAWN BY	HLP	DRWG DATE	12-03-12	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	190		E24259		

MATERIAL: PAINTED or ANODIZED ALUMINUM



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 3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL THK	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	59:1
PERIMETER OUT (TOTAL)	24.529	AREA	.928	WGT/FT	1.091		
FACTOR	22	CIRCLE SIZE	4.897	INT'L VOL/INE	.261		
RXX	1.466	SXX	.794	IXX	1.995	CXX	2.512
RYY	.567	SYY	.298	IYY	.298	CYY	1.002

OPEN BACK SILL 2" X 4 1/2"
 E24000 THERMAL STOREFRONT

DRAWN BY	HLP	DRWG DATE	12-04-12	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	190			E24240	

E24240

MATERIAL: PAINTED or ANODIZED ALUMINUM



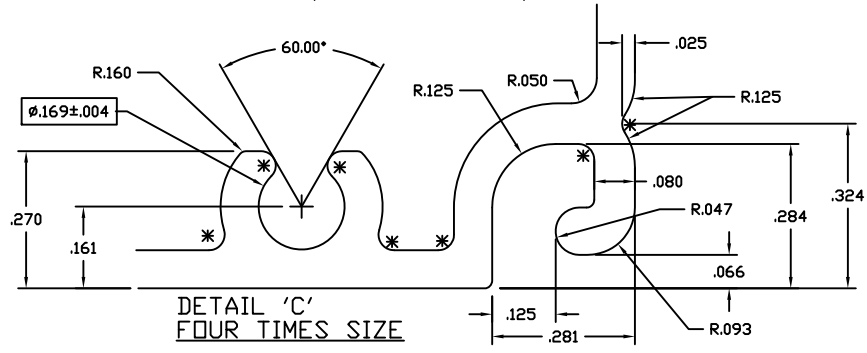
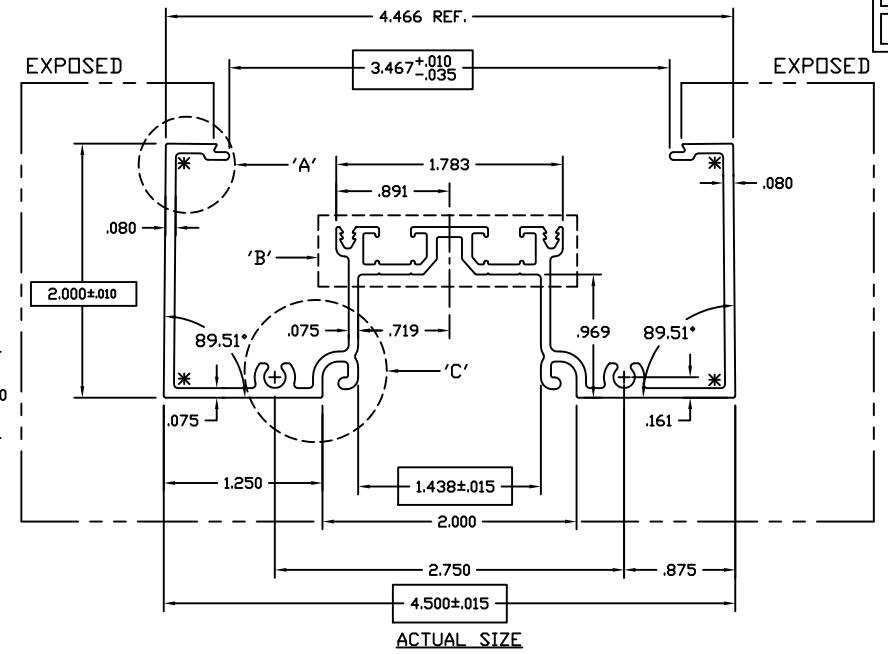
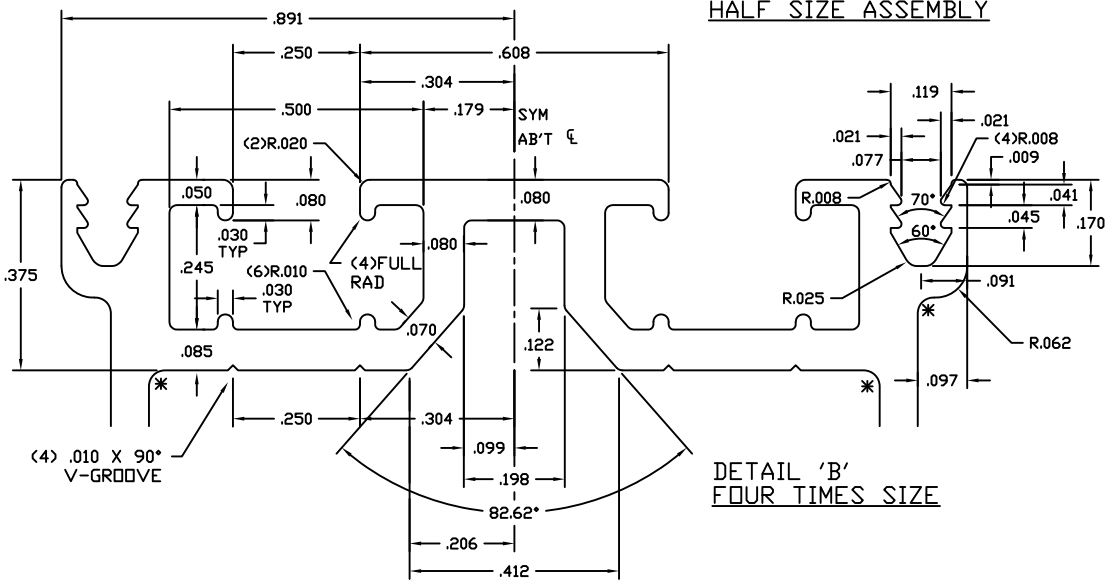
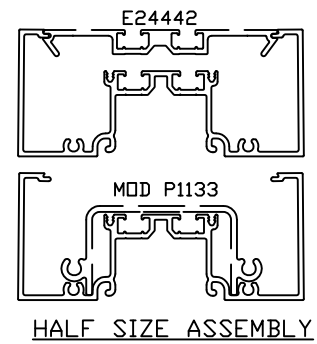
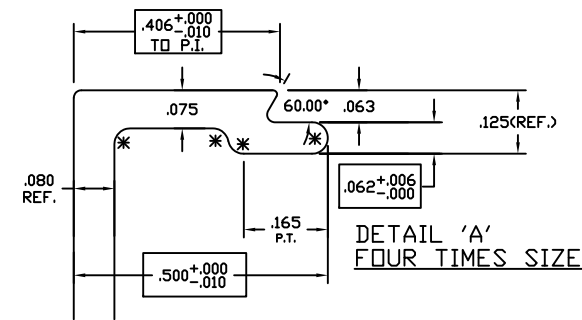
Report #: C5867-116-45

Date: 05/03/13

Verified by: *Kristen S. Herdtscheeger*

Architectural Testing

E24441



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3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

WALL THK	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	49:1
PERIMETER OUT (TOTAL)	28.912	AREA	1.116	WGHT/FT	1.312		
FACTOR	22	CIRCLE SIZE	4.899	INFILL VOL/INE	.261		

RXX	SXX	IXX	CXX
RYY	SYY	IYY	CYY

THERM. HEAD/JAMB/VERTICAL 2" X 4 1/2"
T24000 THERMAL STOREFRONT

DRAWN BY	HLP	DRWG DATE	12-04-12	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	180	E24441			

MATERIAL: PAINTED or ANODIZED ALUMINUM

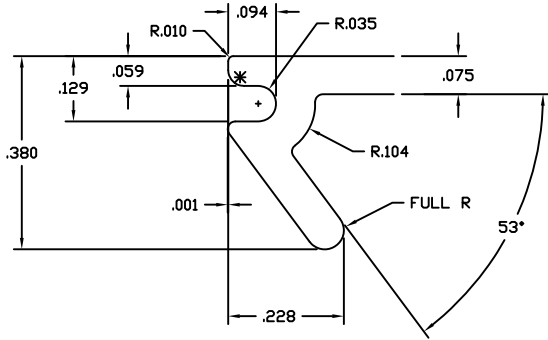


Report #: C5867-116-45

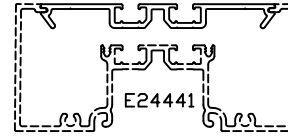
Date: 05/03/13

Verified by: *Kristen K. Friedberger*

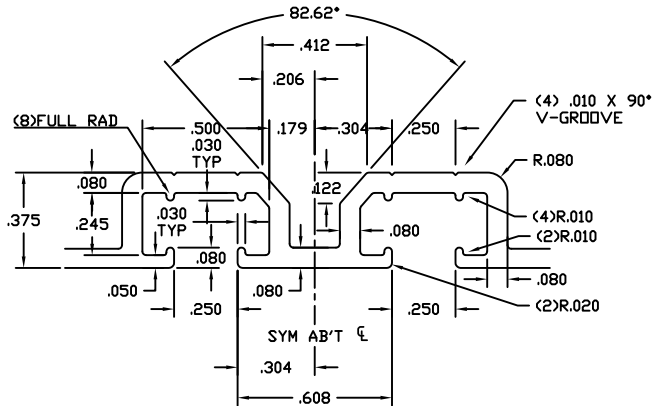
E24442



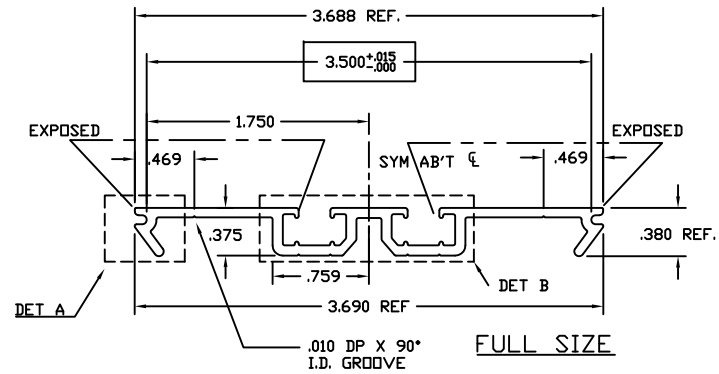
DETAIL "A"
FOUR TIMES SIZE



HALF SIZE ASSEMBLY



DETAIL "B"
TWO TIMES SIZE



FULL SIZE

NOTES:
MATES WITH E24441, E24243
FULLY DEBRIDGE
P & D THERMAL BREAK

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3056 WALKER RIDGE NW, SUITE G
WALKER, MICHIGAN 49544

WALL THK	.075	SECTION CLASS	S	MAT'L	6063-T5	RATIO	122:1
PERIMETER OUT (TOTAL)	12.323	AREA	.453	WGT/FT	.532		
FACTOR	23	CIRCLE SIZE	3.696	INFILL VOL/INE	.261		

RXX	1.060	SXX	.276	IXX	.509	CXX	1.845
RYY	.127	SYX	.031	IYY	.007	CYY	.235

REV	DATE	DESCRIPTION	INTL
	12/07/2012	RELEASED FOR TOOLING, ACCT#4827300000.7020.770	CRH

SNAP IN FILLER
T24000 THERMAL STOREFRONT

DRAWN BY	HLP	DRWG DATE	12-04-12	APPV'D BY		DATE APPV'D	
DWG SCALE	NOTED	PRODUCT CODE	180	E24442		REV	

MATERIAL: PAINTED or ANODIZED ALUMINUM

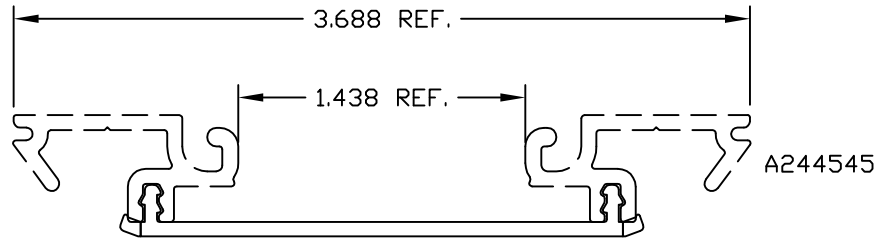


Report #: C5867-116-45

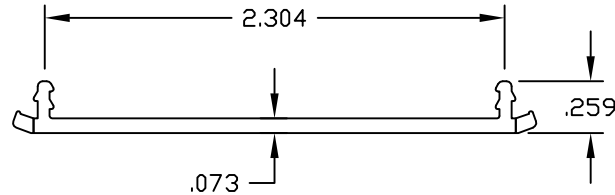
Date: 05/03/13

Architectural Testing Verified by: *Kristen R. Lovelace*

P6595



FULL SIZE ASSEMBLY



FULL SIZE

MATERIAL - RIGID PVC / 60 'A' ALCRYN
 SUPPLIER: TRELLEBORG
 SUPPLIER PART NUMBER: #9724-01-00

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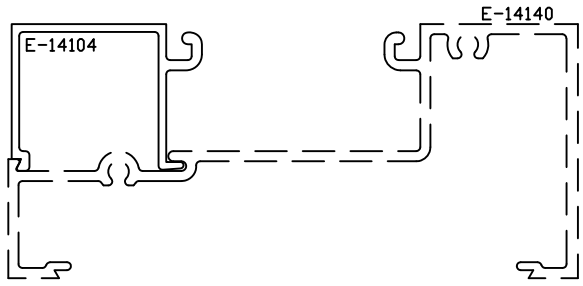
LEADERS IN ECO-EFFICIENT STOREFRONT,
CURTAINWALL AND ENTRANCE SYSTEMS

REV	DATE	DESCRIPTION	INTL
			CRH
			CRH

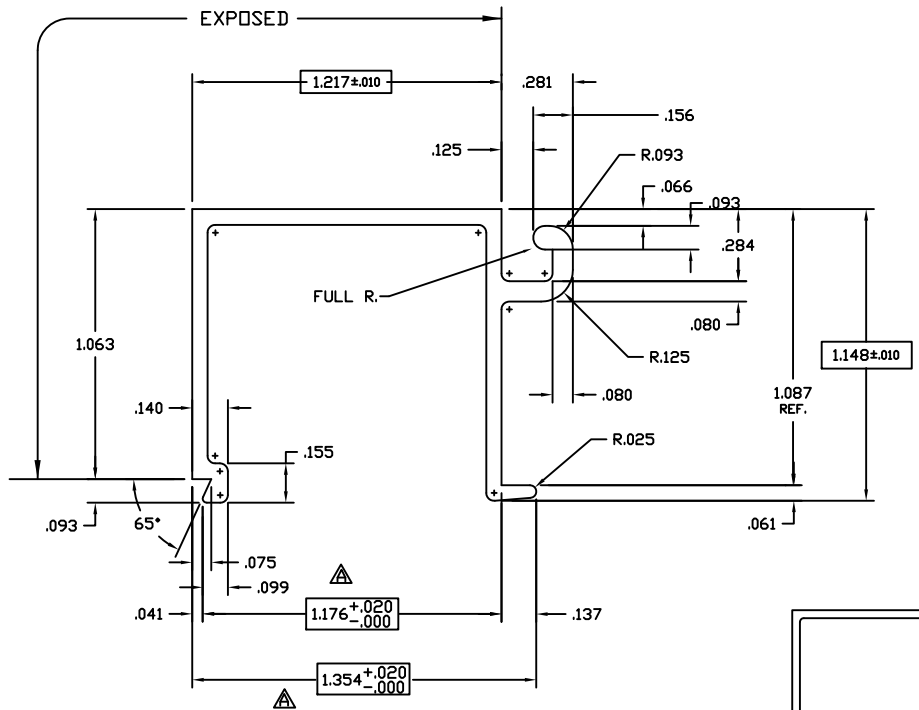
BRIDGE - PLASTIC
 T24000 SERIES

DRAWN BY HLP	DRWG DATE 12-04-12	APPV'D BY	DATE APPV'D	REV
DRWG SCALE FULL	PRODUCT CODE TH SF	P6595		

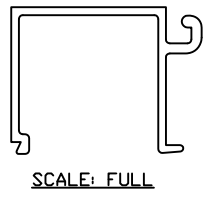
E14104
B



ASSEMBLY
 NOTE: MATES WITH E-14140 AND E-14103



TWO TIMES SCALE



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 CURTAINWALL AND ENTRANCE SYSTEMS

3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

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 VOL/LINE	N/A		
RXX	.550	SXX	.106	IXX	.080	CXX	.757
RYY	.374	SYX	.049	IYY	.037	CYY	.749

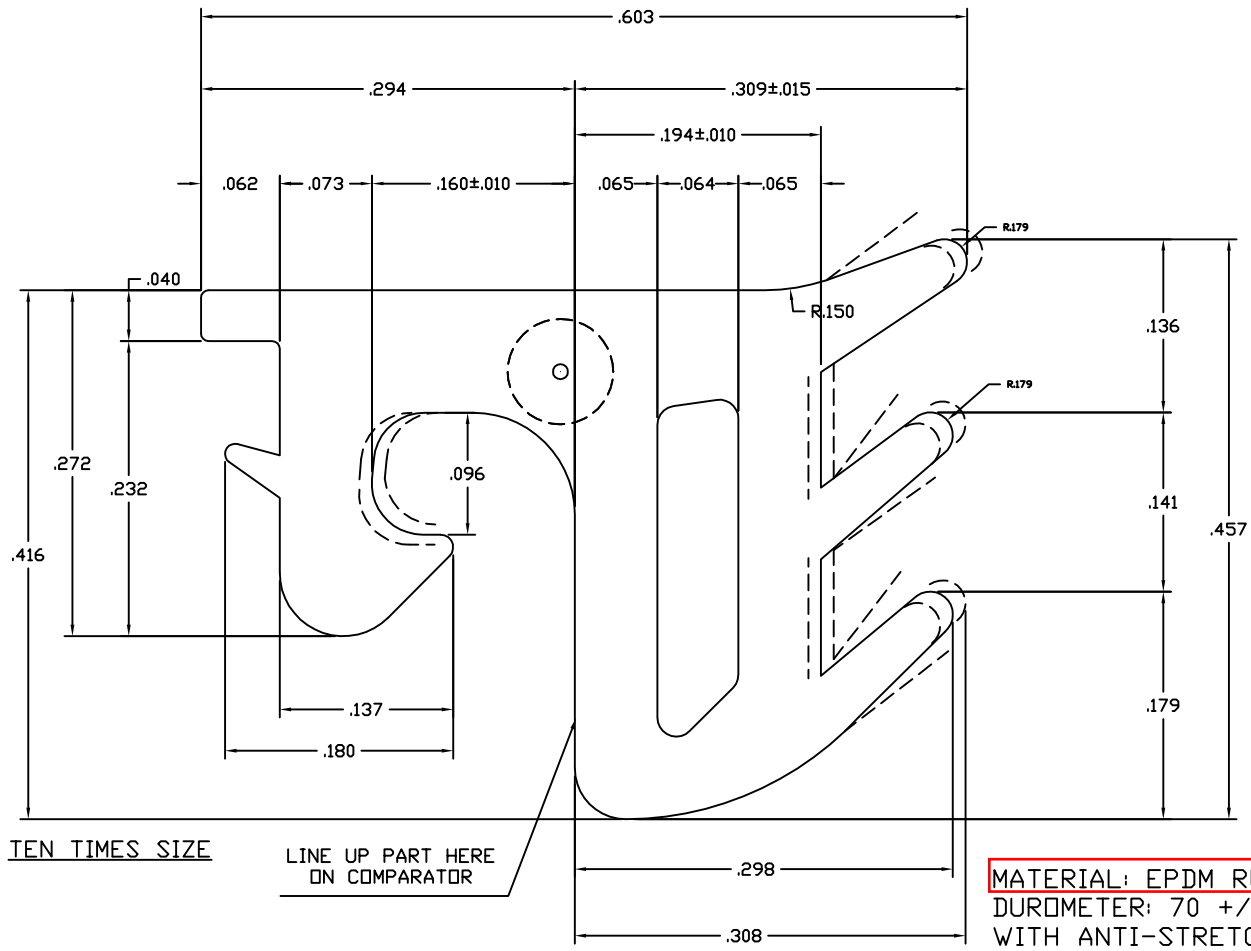
GLASS STOP FOR 1" GLASS
 E14000 NON THERMAL STOREFRONT

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

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

MATERIAL: PAINTED or ANODIZED ALUMINUM

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



ALL TOLERANCES ARE RMA CLASS II UNLESS OTHERWISE NOTED

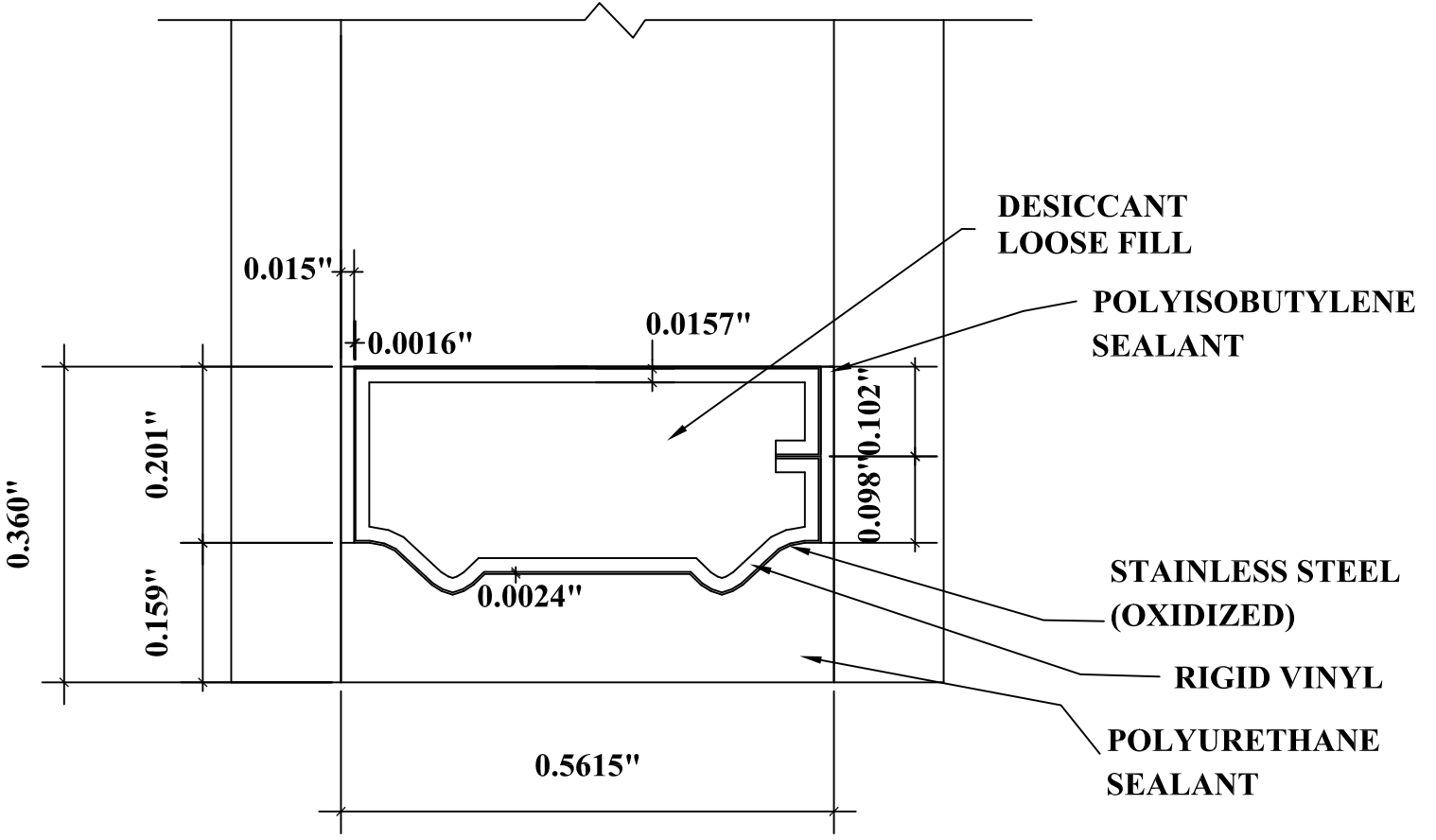
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TUBELITE
 LEADING IN HIGH-EFFICIENCY STOREFRONT, CLIMATEWALL AND ENTRANCE SYSTEMS
 3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

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



DETAIL FOR THERMAL MODELING OF VIRACON EXTREMEEDGE SPACER (SS-D)