

AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

TUBELITE, INC.

SERIES/MODEL: VW3700
TYPE: Projecting (Awning - Single)

Report No: A4278.01-116-45
Report Date: 10/14/10
Simulation Date: 10/14/10
Report Retention Date: 10/14/14

AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

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

Report No: A4278.01-116-45
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Project Summary:

Architectural Testing, Inc. (ATI) was contracted by Tubelite, Inc. to provide U-Factor and Solar Heat Gain Coefficient thermal performance ratings on the VW3700 - Projecting (Awning - Single). The thermal performance ratings were determined in accordance with AAMA 507-07, *Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Building*.

Reference Documents:

AAMA 507-07, *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*

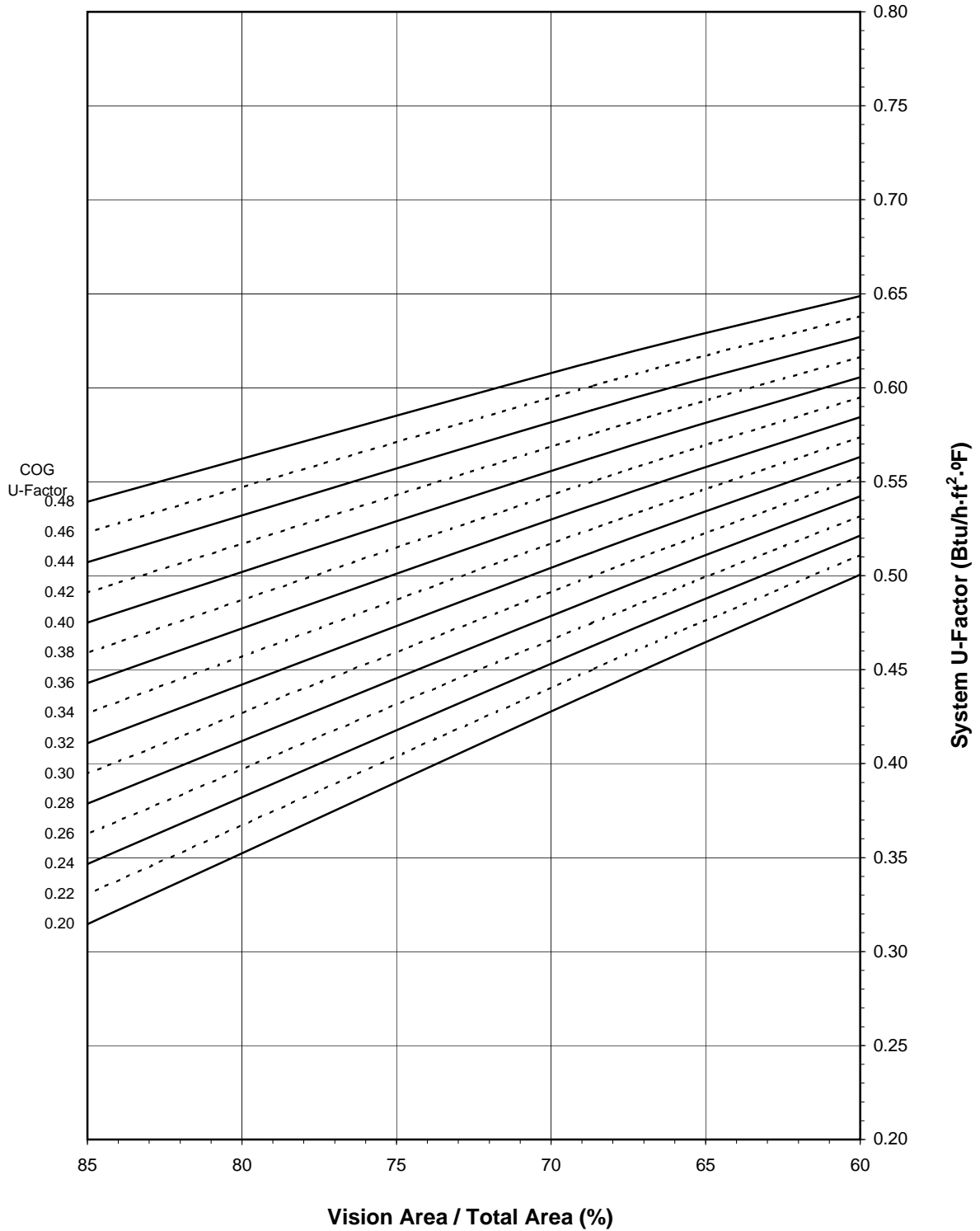
NFRC 200-2010, *Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*

Simulation Specimen Description:

Series/Model: VW3700
Type: Projecting (Awning - Single)
Frame Material: Aluminum Thermally Broken Framing System
Specimen Size: 1500mm wide by 600mm high (59-1/16" by 23-5/8")
Configuration: Single Vision Lite
Drawing Reference: Tubelite Drawing T7961, dated 10/6/10

Tubelite, Inc.
VW3700 - Projecting (Awning - Single)

System U-Factor vs. Percentage of Vision Area



Tubelite, Inc.
VW3700 - Projecting (Awning - Single)

Size Specific U-Factor Matrix*

Glazing Option	Center of Glass U-Factor	Overall U-Factor
1	0.48	0.61
2	0.46	0.60
3	0.44	0.59
4	0.42	0.58
5	0.40	0.56
6	0.38	0.55
7	0.36	0.54
8	0.34	0.52
9	0.32	0.51
10	0.30	0.50
11	0.28	0.49
12	0.26	0.47
13	0.24	0.46
14	0.22	0.45
15	0.20	0.44

Size Specific SHGC Matrix*

Center of Glass SHGC	Overall SHGC
0.75	0.53
0.70	0.50
0.65	0.47
0.60	0.43
0.55	0.40
0.50	0.36
0.45	0.33
0.40	0.29
0.35	0.26
0.30	0.22
0.25	0.19
0.20	0.16
0.15	0.12
0.10	0.09
0.05	0.05

Size Specific VT Matrix*

Center of Glass VT	Overall VT
0.75	0.52
0.70	0.48
0.65	0.45
0.60	0.41
0.55	0.38
0.50	0.34
0.45	0.31
0.40	0.27
0.35	0.24
0.30	0.21
0.25	0.17
0.20	0.14
0.15	0.10
0.10	0.07
0.05	0.03

*Size Specific U-Factor, SHGC, and VT Matrices are based on the standard Projecting (Awning - Single) specimen size of 1500mm wide by 600mm high (59-1/16" by 23-5/8"). This represents 68.7% 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		
							60% Vision Area	NFRC 100-2010	85% Vision Area
							45.19" by 18.07"	59.06" by 23.62"	128.16" by 51.26"
1	0.48	43.7	Head	2.8367	0.8392	0.5442	0.6487	0.6136	0.5393
			R Jamb	2.8367	0.8589	0.5445			
			L Jamb	2.8367	0.8589	0.5445			
			Sill	2.8367	0.8387	0.5443			
2	0.46	44.8	Head	2.8367	0.8386	0.5302	0.6380	0.6008	0.5232
			R Jamb	2.8367	0.8583	0.5306			
			L Jamb	2.8367	0.8583	0.5306			
			Sill	2.8367	0.8381	0.5303			
3	0.44	45.8	Head	2.8367	0.8380	0.5163	0.6271	0.5880	0.5071
			R Jamb	2.8367	0.8578	0.5167			
			L Jamb	2.8367	0.8578	0.5167			
			Sill	2.8367	0.8376	0.5164			
4	0.42	46.8	Head	2.8367	0.8375	0.5025	0.6163	0.5753	0.4911
			R Jamb	2.8367	0.8573	0.5030			
			L Jamb	2.8367	0.8573	0.5030			
			Sill	2.8367	0.8370	0.5027			
5	0.40	47.9	Head	2.8367	0.8370	0.4888	0.6056	0.5626	0.4750
			R Jamb	2.8367	0.8567	0.4893			
			L Jamb	2.8367	0.8567	0.4893			
			Sill	2.8367	0.8365	0.4890			
6	0.38	48.9	Head	2.8367	0.8365	0.4753	0.5950	0.5500	0.4590
			R Jamb	2.8367	0.8563	0.4758			
			L Jamb	2.8367	0.8563	0.4758			
			Sill	2.8367	0.8360	0.4755			
7	0.36	50.0	Head	2.8367	0.8360	0.4617	0.5843	0.5373	0.4429
			R Jamb	2.8367	0.8558	0.4622			
			L Jamb	2.8367	0.8558	0.4622			
			Sill	2.8367	0.8355	0.4619			
8	0.34	51.0	Head	2.8367	0.8355	0.4483	0.5738	0.5248	0.4269
			R Jamb	2.8367	0.8553	0.4489			
			L Jamb	2.8367	0.8553	0.4489			
			Sill	2.8367	0.8350	0.4485			
9	0.32	52.0	Head	2.8367	0.8351	0.4348	0.5632	0.5122	0.4108
			R Jamb	2.8367	0.8548	0.4355			
			L Jamb	2.8367	0.8548	0.4355			
			Sill	2.8367	0.8346	0.4351			
10	0.30	53.1	Head	2.8367	0.8346	0.4216	0.5527	0.4997	0.3948
			R Jamb	2.8367	0.8544	0.4222			
			L Jamb	2.8367	0.8544	0.4222			
			Sill	2.8367	0.8341	0.4218			
11	0.28	54.2	Head	2.8367	0.8342	0.4082	0.5422	0.4872	0.3787
			R Jamb	2.8367	0.8540	0.4089			
			L Jamb	2.8367	0.8540	0.4089			
			Sill	2.8367	0.8337	0.4084			

Vision Area Data

Option No.	COG U-Factor	COG Temperature	Cross Section	Frame Height	Frame U-Factor	Edge U-Factor	Total Product U-Factor		
							60% Vision Area	NFRC 100-2010	85% Vision Area
							45.19" by 18.07"	59.06" by 23.62"	128.16" by 51.26"
12	0.26	55.2	Head	2.8367	0.8338	0.3950	0.5318	0.4748	0.3626
			R Jamb	2.8367	0.8536	0.3956			
			L Jamb	2.8367	0.8536	0.3956			
			Sill	2.8367	0.8333	0.3952			
13	0.24	56.3	Head	2.8367	0.8334	0.3819	0.5214	0.4623	0.3466
			R Jamb	2.8367	0.8532	0.3825			
			L Jamb	2.8367	0.8532	0.3825			
			Sill	2.8367	0.8329	0.3820			
14	0.22	57.3	Head	2.8367	0.8330	0.3688	0.5110	0.4499	0.3306
			R Jamb	2.8367	0.8527	0.3694			
			L Jamb	2.8367	0.8527	0.3694			
			Sill	2.8367	0.8325	0.3690			
15	0.20	58.4	Head	2.8367	0.8326	0.3557	0.5006	0.4375	0.3145
			R Jamb	2.8367	0.8524	0.3563			
			L Jamb	2.8367	0.8524	0.3563			
			Sill	2.8367	0.8321	0.3558			

Detailed drawings, datasheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by ATI for a period of four years from the original test date. At the end of this retention period such materials shall be discarded without notice and the service life of this report by Architectural Testing 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 named herein and relates only to the specimen(s) 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:

Kevin S. Louder
Project Engineer

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

KSL:KSL
A4278.01-116-45

Attachments (pages): This report is complete only when all attachments listed are included
Appendix A: Drawings and Bills of Material (7)

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01 R0	10/14/2010	All	Original Report Issue



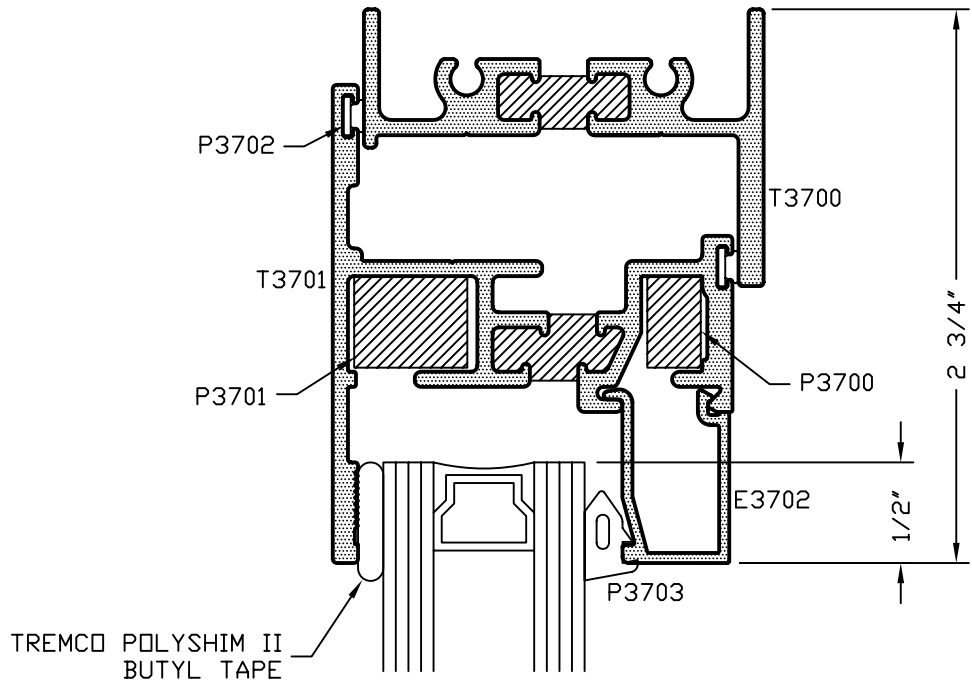
All drawings and Bills of Material used in simulating this product are enclosed in this Appendix.

ATI

Report # A4278-116-45

Date 10/14/10

Simulator *Ken Lamb*



TUBELITE®
 STOREFRONT, CURTAINWALL & ENTRANCES
 DEPENDABLE

VW3700 CASEMENT WINDOW
 THERMAL PERFORMANCE TEST
 HEAD DETAIL

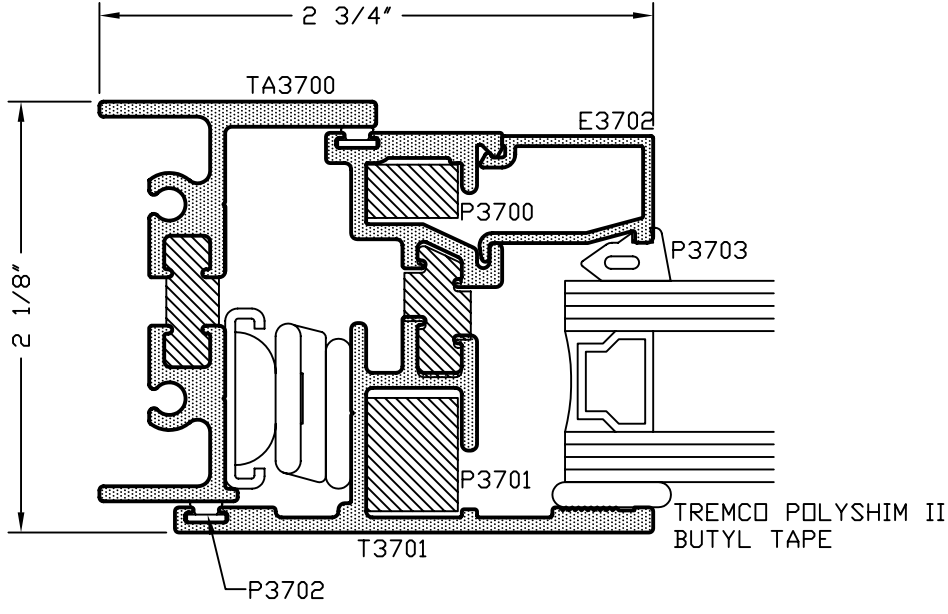
DRAWN BY JEM	DRWG DATE 10/06/10	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 120	T961-1		

ATI

Report # A4278-116-45

Date 10/14/10

Simulator *Ken Lamb*



TUBELITE®

STOREFRONT, CURTAINWALL & ENTRANCES

DEPENDABLE

VW3700 CASEMENT WINDOW
THERMAL PERFORMANCE TEST
JAMB DETAIL

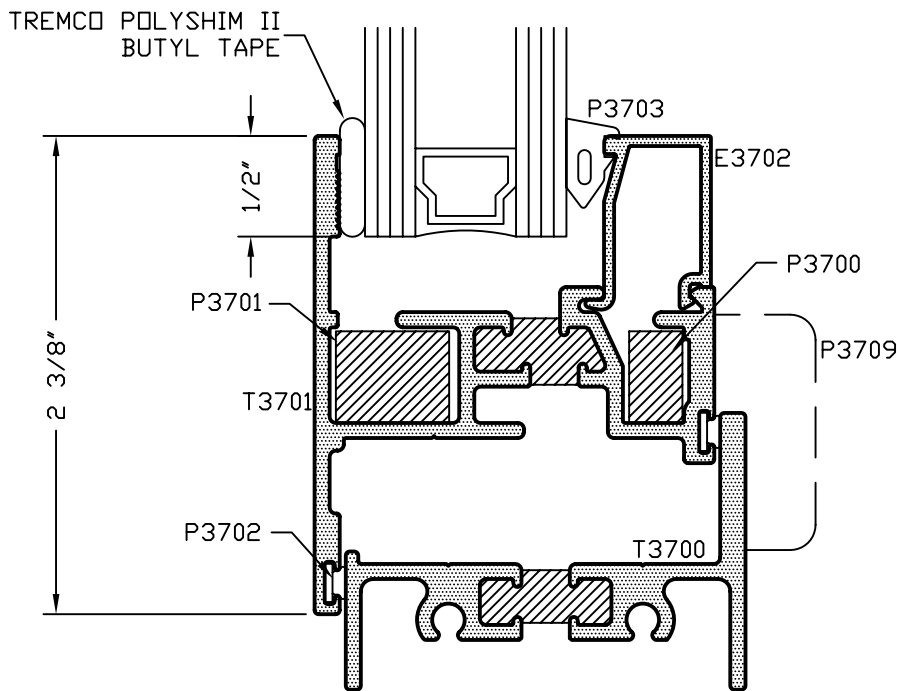
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DRWG SCALE 1"=1"	PRODUCT CODE 120	T961-2		

ATI

Report # A4278-116-45

Date 10/14/10

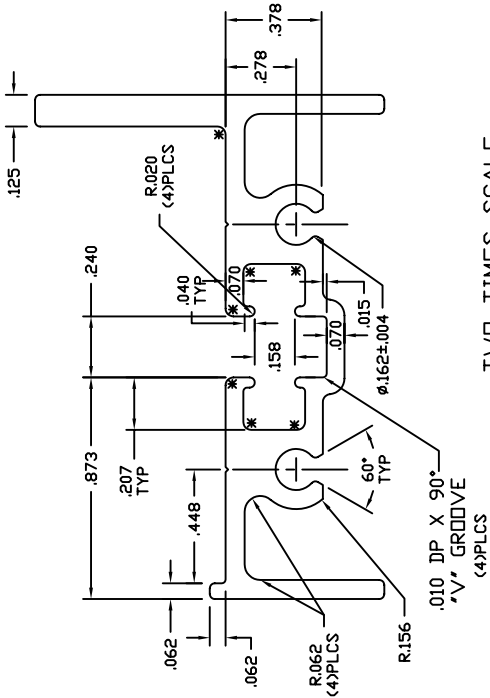
Simulator *Ken Lamb*



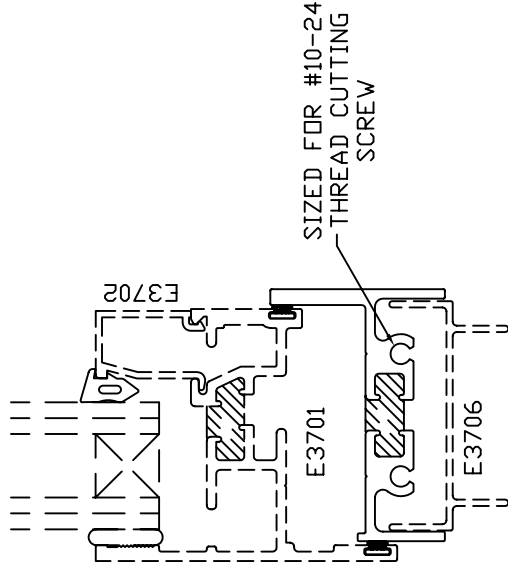
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 DEPENDABLE

VW3700 CASEMENT WINDOW
 THERMAL PERFORMANCE TEST
 SILL DETAIL

DRAWN BY JEM	DRWG DATE 10/06/10	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 120	T961-3		



TWO TIMES SCALE



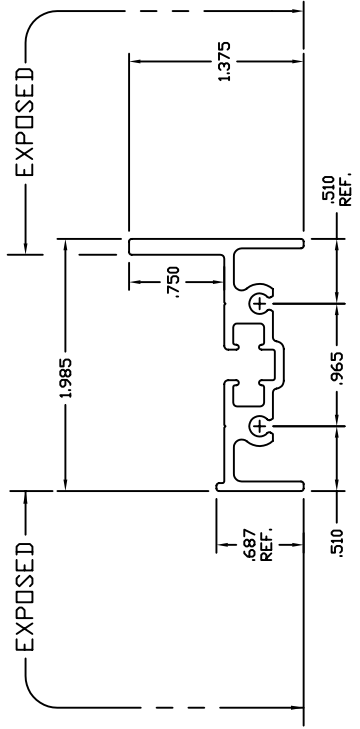
ASSEMBLY

ATI

Report # A4278-116-45

Date 10/14/10

Simulator *Ken Lamb*



FULL SIZE

AZOBRADE AND FULLY DEBRIDGE

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

TUBELITE
ALUMINUM
CORPORATION
3056 WALKER RIDGE, NY, SUITE G
WALKER, MICHIGAN 49344

WALL THICKNESS	.075	SECTION S	MAT'L 6063-T5	RATIO 11:1
PERIMETER (TOTAL)	11.054	AREA	.504	WGT/FT .592
FACTOR	20	CIRCLE SIZE	2.415	INCH VALUE .1582
RXX	.672	SXX	.197	IKX .228
RYX	.284	SYX	.048	IYX .041
				CKX .826
				CYX .528

CONVENTIONAL VENT FRAME 1 3/8" X 2"
VENT WINDOW

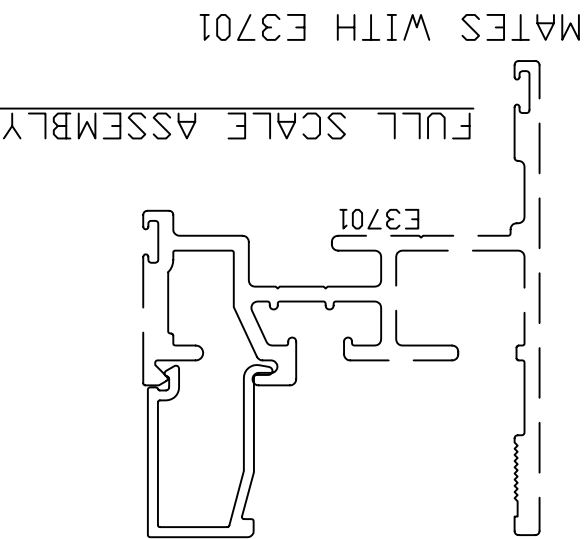
DRWN CRH	DATE	APPROV'D BY	SCALE	PRODUCT CODE	REV
	08/23/00		1:20	E3700	A

REV	DATE	BY	APV'D	DATE	BY	APV'D	DATE	BY	APV'D
				08/17/00					

GLASS STOP FOR 1" GLASS VENT WINDOWS

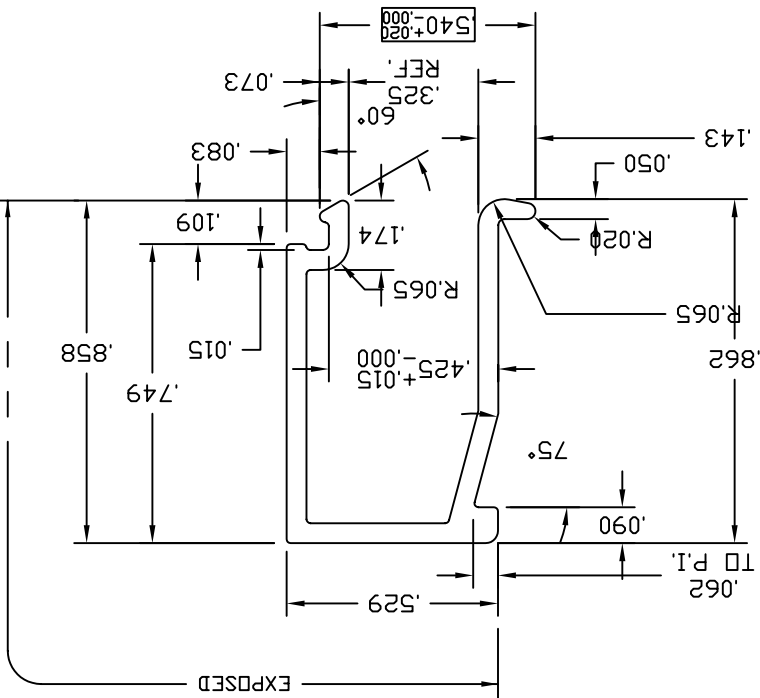
RXX	.215	SXX	.020	IXX	.006	CXX	.351
RYY	.286	SYY	.026	IYY	.010	CYY	.490

WAL THK.	.050	SECTION CLASS	S	MAT'L	6063-T5	RATIO	464:1
PERIMETER OUT (TOTAL)	4.737	AREA	.119	WGT/FT	.140		
FACTOR	34	CIRCLE SIZE	1.043	INFILL VOLUME	N/A		

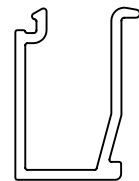


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Simulator *Ken Law*

TWO TIMES SCALE



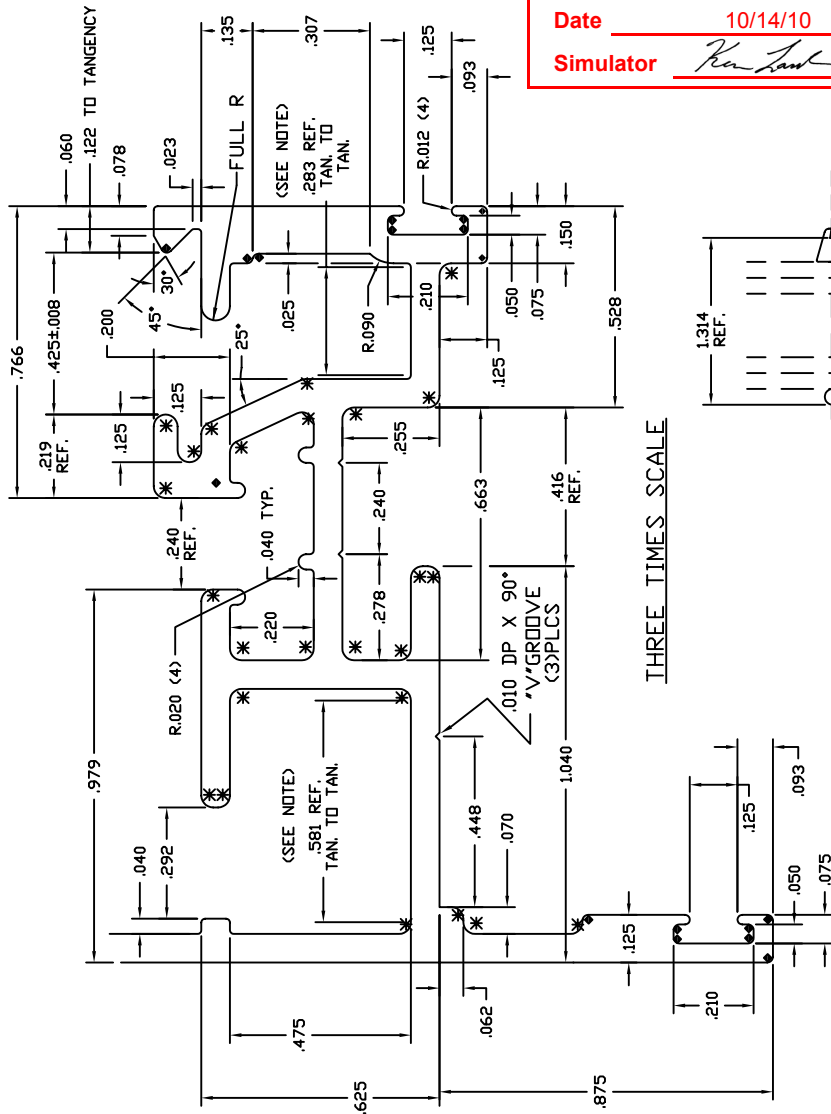
FULL SCALE



E3702

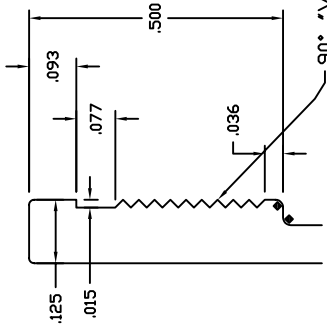
REV	DATE	DESCRIPTION
INTL		
CRH	08/25/00	RELEASE FOR TOOLING
CRH	09/15/00	PART NUMBER WAS E9080001
SRD	02/13/02	PART NUMBER WAS E908A01

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 ALL UNSPECIFIED RADII .015
 * INDICATES .031 RADII
 □ DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE
 3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544
TUBELITE
 DEPENDABLE
 LEADERS IN ECO-FRIENDLY STORAGE CURTAINWALL AND ENTRANCE SYSTEMS

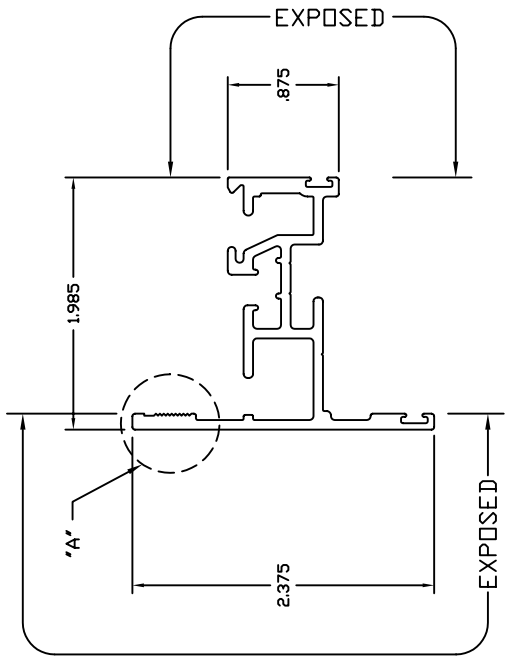


THREE TIMES SCALE

NOTE:
CORNER CLIPS
EXT. #E3706
(CRIMP IN PLACE)



DETAIL "A"
FOUR TIMES SCALE



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Simulator *Ken Hank*

MATES WITH E3700, E3702 AND E3706

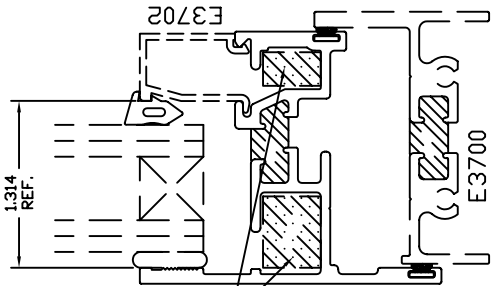
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TUBELITE
CORPORATION
3056 WALKER BRIDGE, N.Y. SUITE G
WALKER, MICHIGAN 49344

WALL	.075	SECTION	S	MAT'L	6063-T5	RATIO	871
PERIMETER	15.987	AREA	.639	WGT/FT	.751		
FACTORS	21	CIRCLE	2.737	INCH	1.680		
RXX	.714	SXX	.283	IKX	.326	CKX	1.151
RYY	.460	SYY	.112	IYY	.135	CYY	1.203

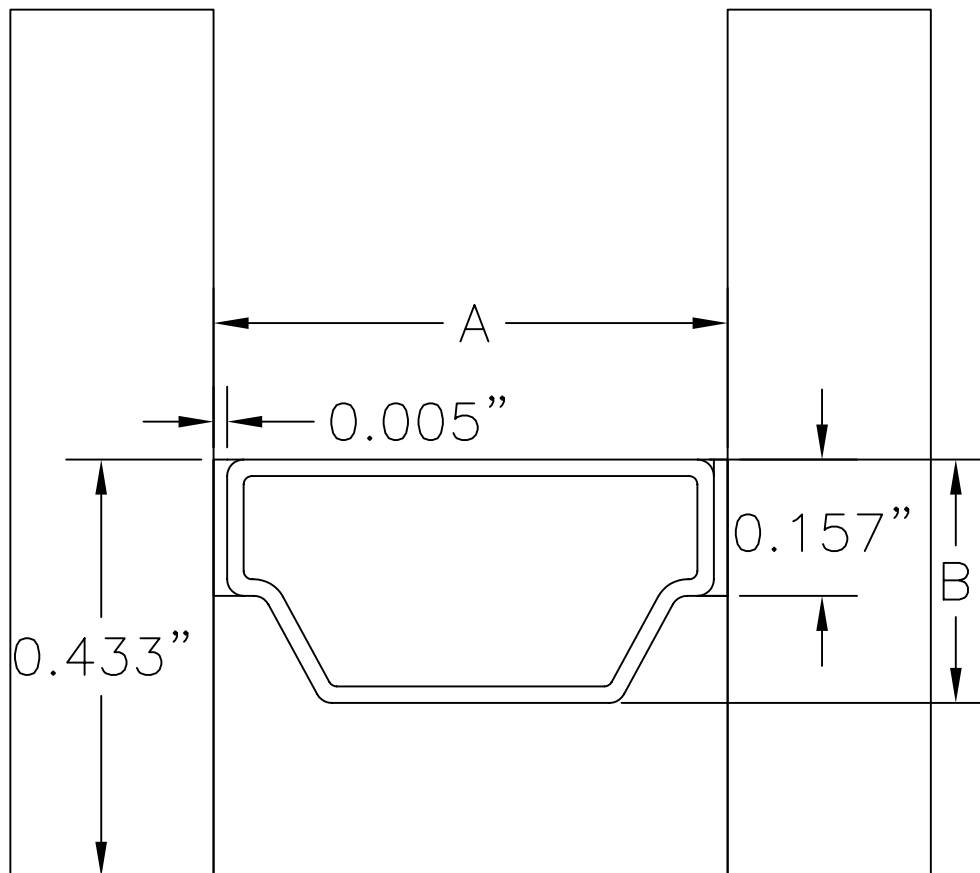
CONVENTIONAL VENT SASH 2 3/8" X 2"
VENT WINDOW

BRANCH	CRH	DATE	08/17/00	APPROV'D	
DWG	SCALE	NOTED	PRODUCT	CODE	120
					E3701
					REV



ASSEMBLY

Aluminum Spacer



Finish Anodized
Offset: None
Primary Sealant: Butyl Rubber
Secondary Sealant: Butyl Rubber
Material: Aluminum
Width (A): 0.500
Height (B): 0.295
Wall Thickness: 0.016

ATI
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Simulator Ken Lund