

AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

TUBELITE, INC.

SERIES/MODEL: CW3700

TYPE: Casement - Single

Report No:	A4276.01-116-45
Report Date:	10/13/10
Simulation Date:	10/13/10
Report Retention Date:	10/13/14

AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

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

Report No: A4276.01-116-45
Report Date: 10/13/10
Simulation Date: 10/13/10
Report Retention Date: 10/13/14

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 CW3700 - Casement - 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*

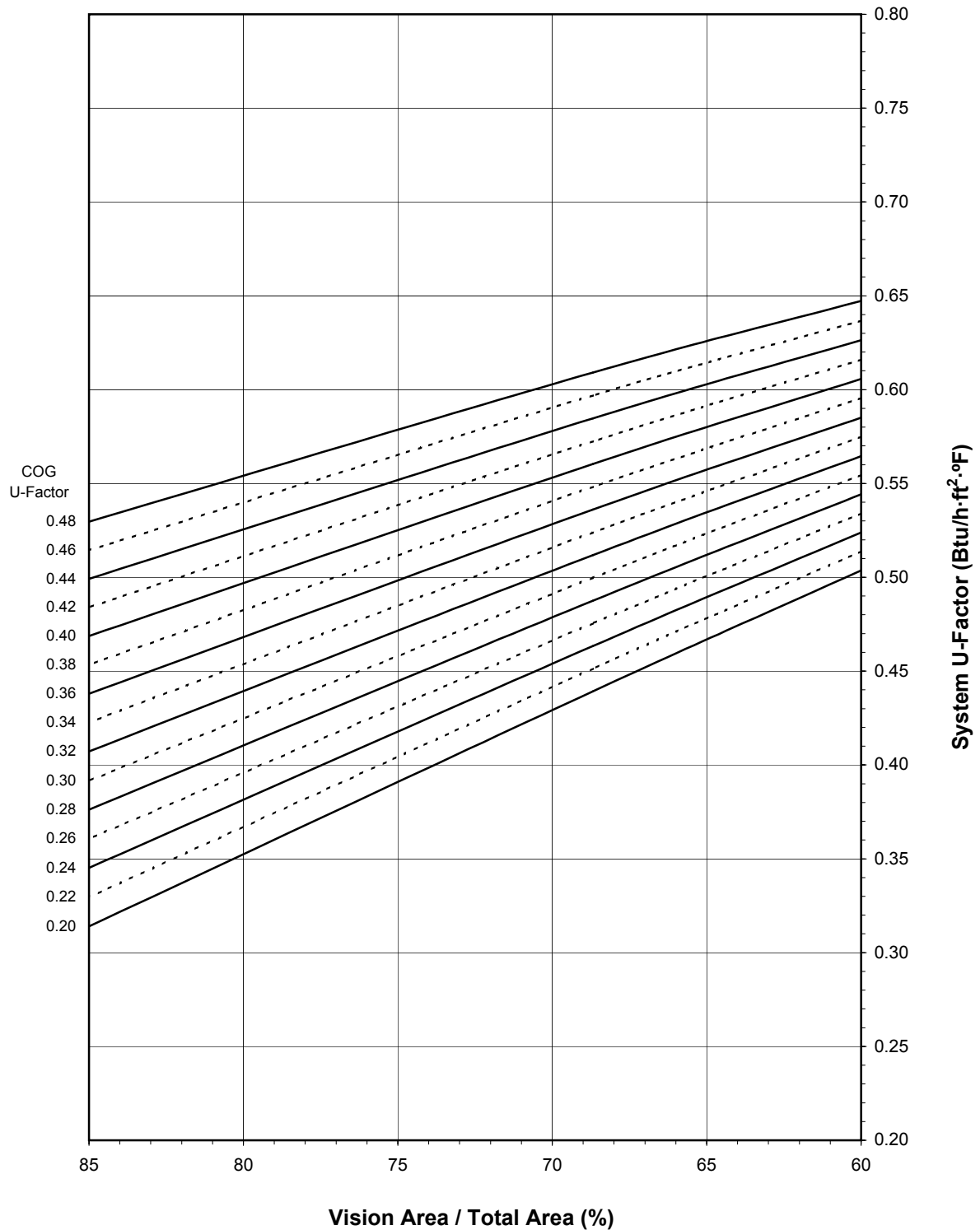
NFRC 200-2010, *Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*

Simulation Specimen Description:

Series/Model: CW3700
Type: Casement - Single
Frame Material: Aluminum Thermally Broken Framing System
Specimen Size: 600mm wide by 1500mm high (23-5/8" by 59-1/16")
Configuration: Single Vision Lite
Drawing Reference: Tubelite Drawing T7959, dated 10/6/10

Tubelite, Inc.
 CW3700 - Casement - Single

System U-Factor vs. Percentage of Vision Area



Tubelite, Inc.
CW3700 - Casement - 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	0.58
4	0.42	0.57
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	0.48
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 Casement - Single specimen size of 600mm wide by 1500mm high (23-5/8" by 59-1/16"). 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
							18.07" by 45.19"	23.62" by 59.06"	51.26" by 128.16"
1	0.48	43.7	Head	2.8367	0.8392	0.5442	0.6472	0.6091	0.5296
			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	0.6368	0.5969	0.5144
			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	0.6264	0.5847	0.4992
			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	0.6160	0.5725	0.4839
			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	0.6057	0.5603	0.4687
			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	0.5954	0.5482	0.4533
			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	0.5851	0.5360	0.4380
			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	0.5749	0.5239	0.4226
			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	0.5646	0.5118	0.4072
			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	0.5544	0.4997	0.3917
			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	0.5442	0.4875	0.3762
			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
							18.07" by 45.19"	23.62" by 59.06"	51.26" by 128.16"
12	0.26	55.2	Head	2.8367	0.8338	0.3950	0.5340	0.4754	0.3606
			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	0.5238	0.4633	0.3451
			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	0.5137	0.4513	0.3296
			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	0.5036	0.4392	0.3140
			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
A4276.01-116-45

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	10/13/2010	All	Original Report Issue



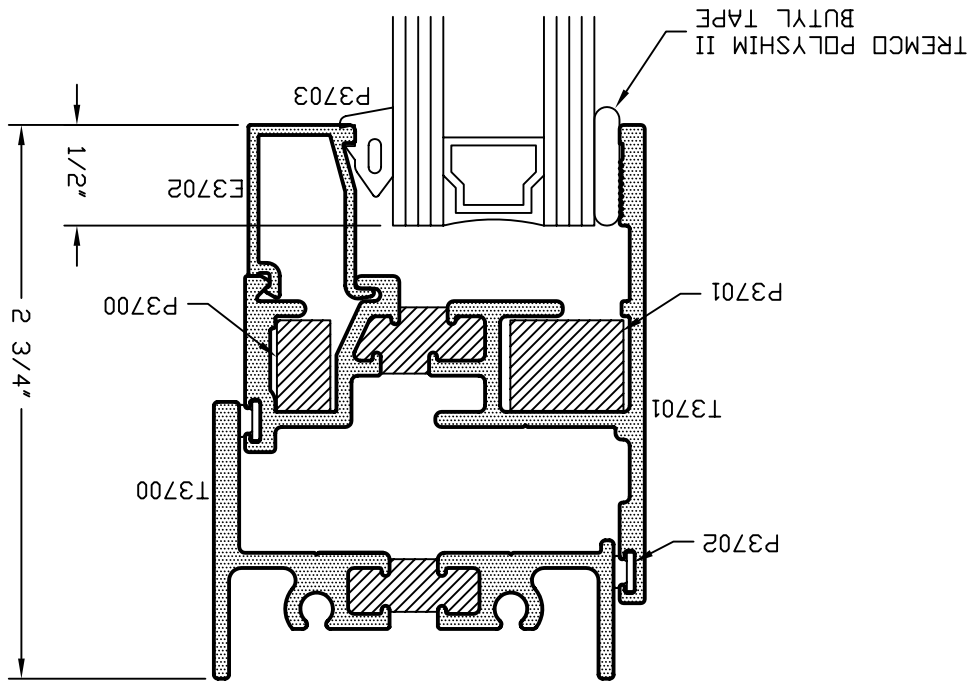
All drawings and Bills of Material used in simulating this product are enclosed in this Appendix.

TURBELITE®
 STOREFRONT, CURTAINWALL & ENTRANCES
 DEPENDABLE

SCALE 1"=1'	PRODUCT CODE 120	DRWG 1959-1
BY JEM	DATE 10/06/10	APPR'D
REV	DATE	APPR'D

CW3700 CASEMENT WINDOW
 THERMAL PERFORMANCE TEST
 HEAD DETAIL

ATI
 Report # A4276-116-45
 Date 10/13/10
 Simulator Ken Law



1959-1

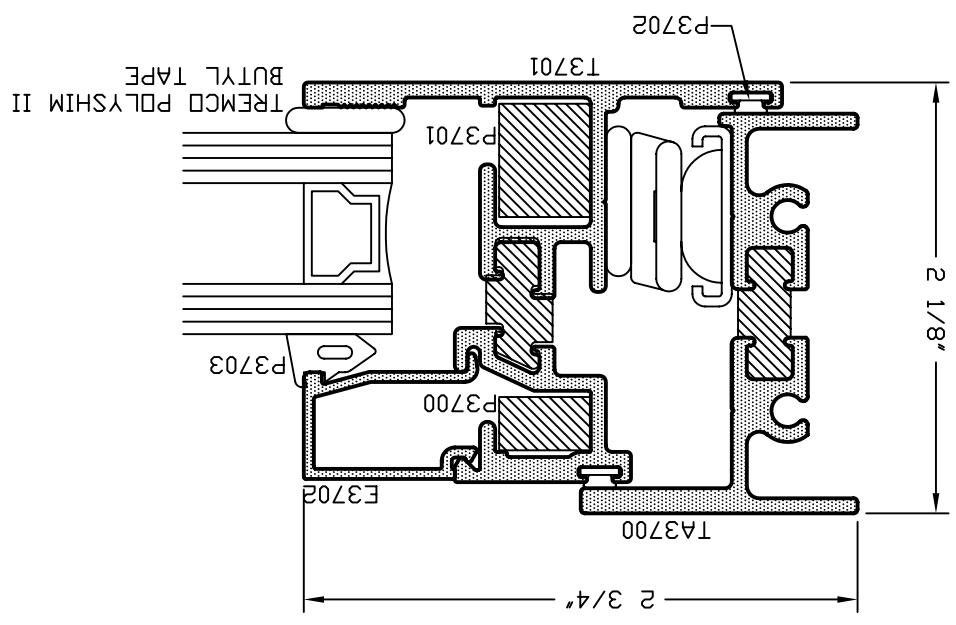
TURBELITE®

STOREFRONT, CURTAINWALL & ENTRANCES
DEPENDABLE

SCALE 1"=1"	PRODUCT CODE 120	DRWG 1959-2
BY JEM	DATE 10/06/10	APPLY BY
REV	DATE	APPLY DATE

CW3700 CASEMENT WINDOW
THERMAL PERFORMANCE TEST
JAMB DETAIL

ATI
Report # A4276-116-45
Date 10/13/10
Simulator Ken Law



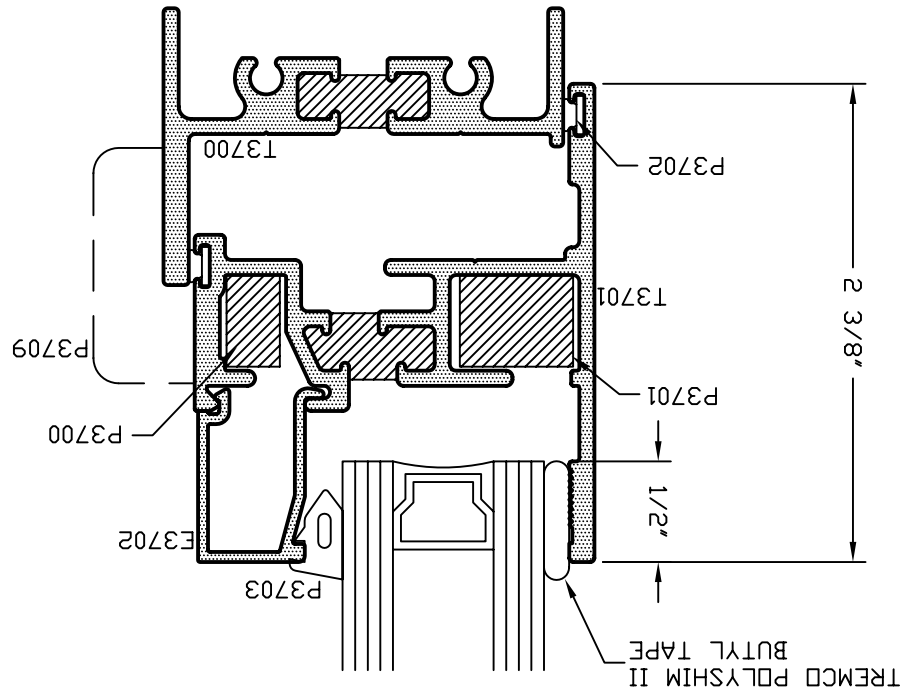
1959-2

TURBELITE®
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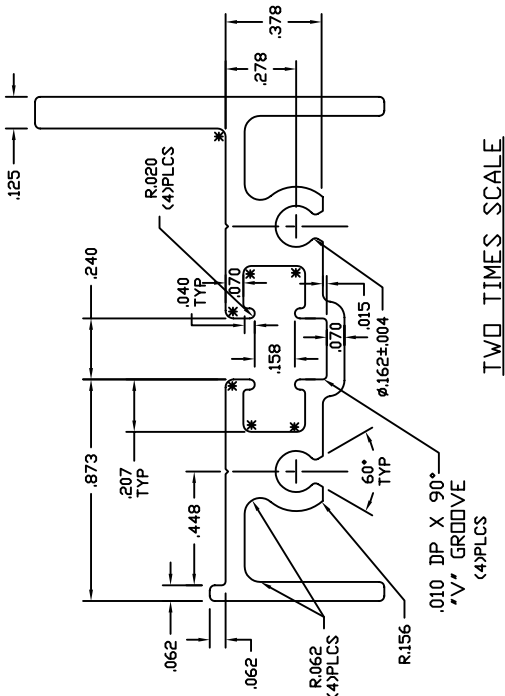
REV	DATE	BY	SCALE 1"=1'
	10/06/10	JEM	PRODUCT 120
			DRWG 10/06/10
			T959-3

CW3700 CASEMENT WINDOW
 THERMAL PERFORMANCE TEST
 SILL DETAIL

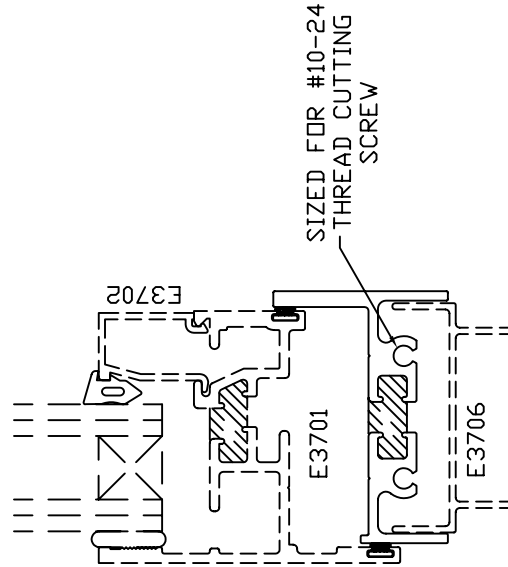
ATI
 Report # A4276-116-45
 Date 10/13/10
 Simulator Ken Law



T959-3



TWO TIMES SCALE



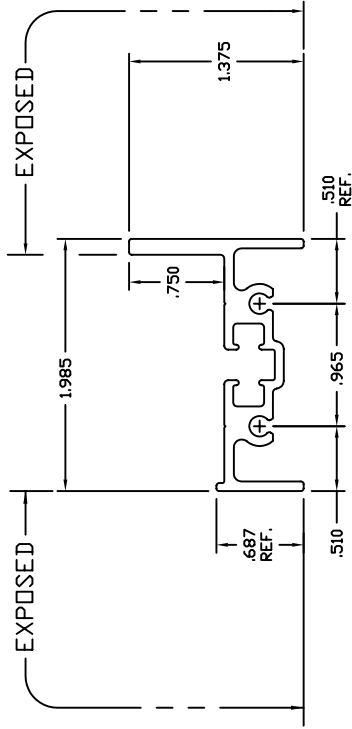
ASSEMBLY

ATI

Report # A4276-116-45

Date 10/13/10

Simulator *Ken Lamb*



FULL SIZE

AZOBRADE AND FULLY DEBRIDGE

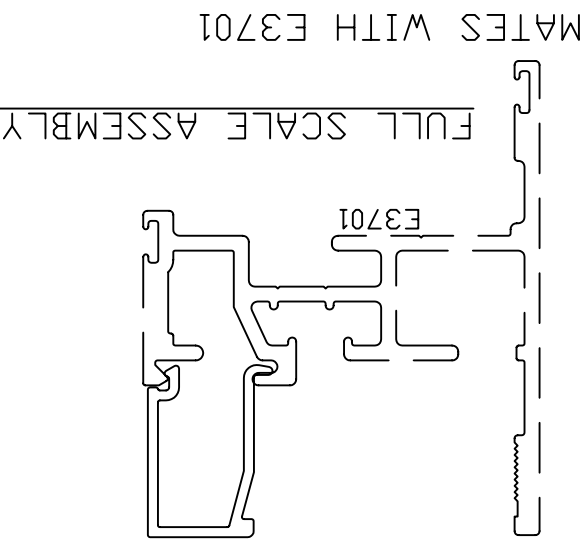
©2006 TUBELITE INC. ALL RIGHTS RESERVED ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED ALL UNSPECIFIED RADII .015 * INDICATES .031 RADIUS □ DENOTES CRITICAL DIMENSION ALL DIMS PROPERTY OF TUBELITE		TUBELITE ALUMINUM CORPORATION 3056 WALKER RIDGE, N.Y. SUITE G WALKER, MICHIGAN 49344		MATERIAL SECTION S MAYL 6063-T5 RATIO 111:1	
PERIMETER (TOTAL) 11.054		AREA .504		WGT/FT .592	
FACTOR 20		CIRCLE SIZE 2.415		NET WEIGHT .1582	
RXX .672	SXX .197	IKX .228	CXX .826		
RYX .284	SYX .048	IYX .041	CYX .528		
CONVENTIONAL VENT FRAME 1 3/8" X 2"					
DATE	DESCRIPTION	DATE	APPROVED BY	PRODUCT CODE	REV
06/25/00	RELEASED FOR TOOLING			120	A
09/15/00	PART NUMBER WAS E3060003				
02/19/02	PART NUMBER WAS E306003				
04/05/06	REVISED PAD CAVITY FOR AZOBRADE				
06/06/06	RELEASED FOR TOOLING				

SCALE NOTED	PRODUCT 120	E3702
DRWN CRH	DATE 08/17/00	APV'D
BY	DATE	REV

GLASS STOP FOR 1" GLASS VENT WINDOWS

RXX .215	SXX .020	IXX .006	CXX .351
RYX .286	SYX .026	IYX .010	CYX .490

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



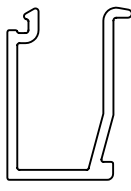
ATI

Report # A4276-116-45

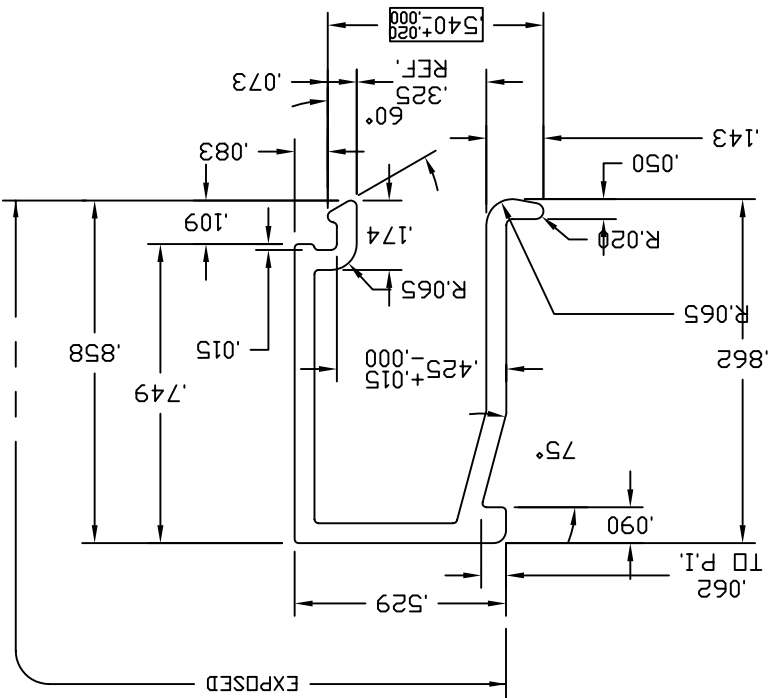
Date 10/13/10

Simulator *Ken Law*

FULL SCALE



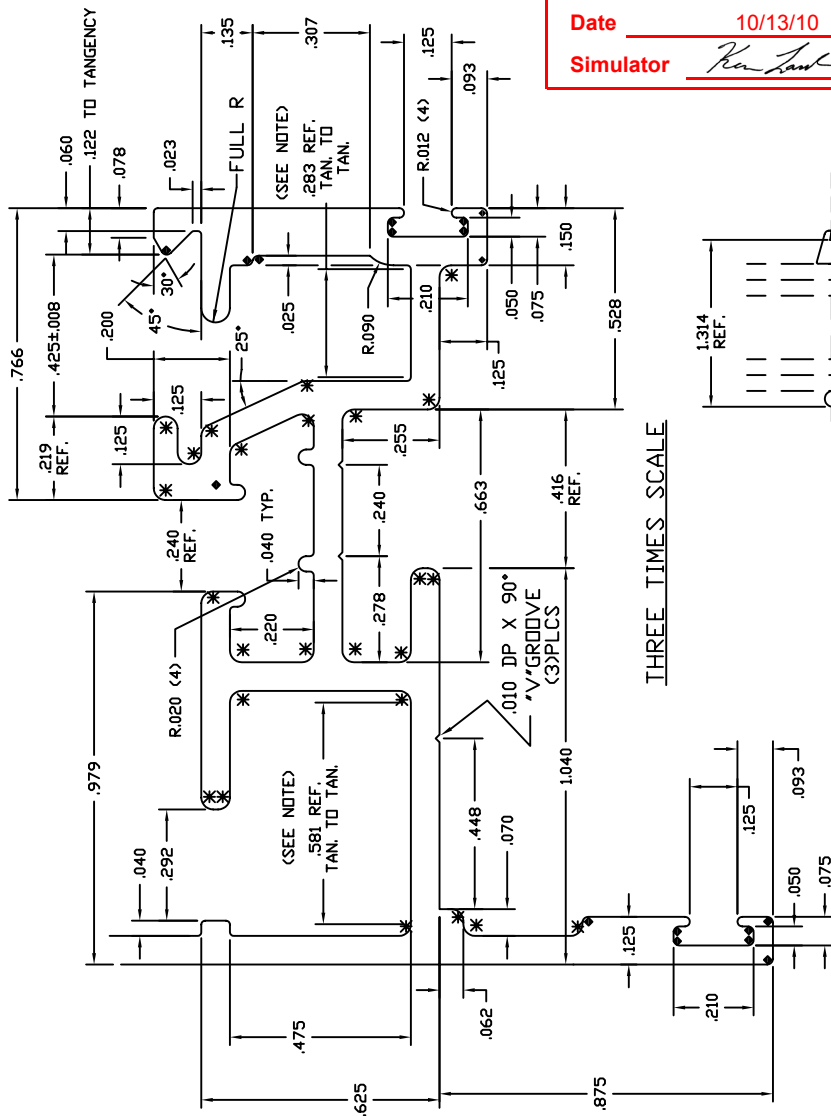
TWO TIMES SCALE



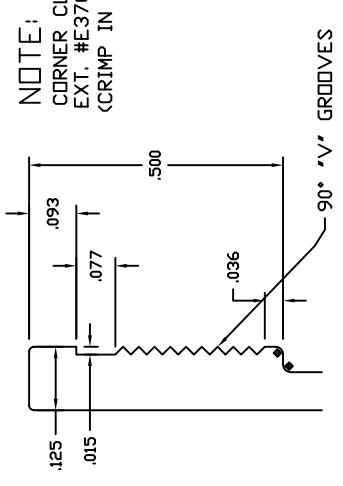
E3702

REV	DATE	DESCRIPTION
08/25/00		RELEASE FOR TOOLING
09/15/00		PART NUMBER WAS E3080001
02/13/02		PART NUMBER WAS E308A01

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 ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED
 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

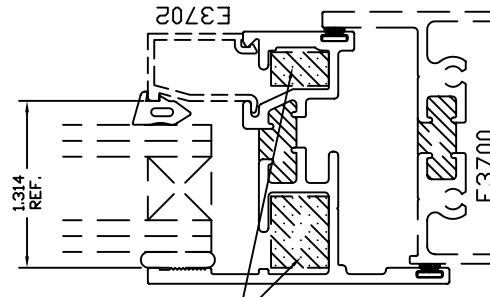


THREE TIMES SCALE

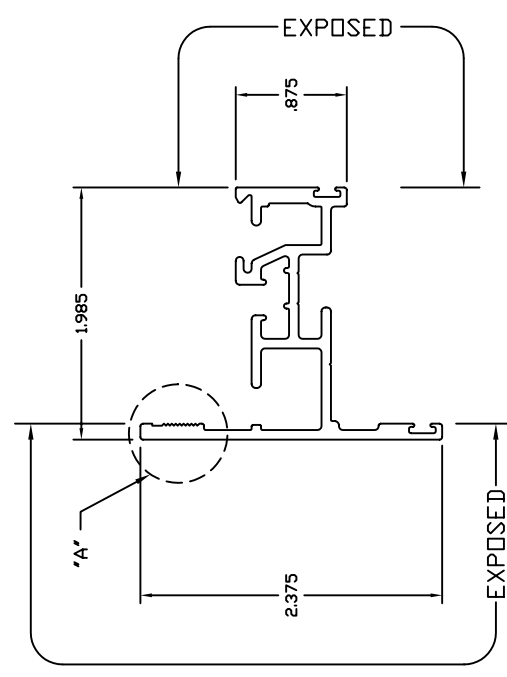


DETAIL "A"

FOUR TIMES SCALE



ASSEMBLY



FULL SIZE

ATI
Report # A4276-116-45
Date 10/13/10
Simulator Ken Lamb

MATES WITH E3700, E3702 AND E3706

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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
 3056 WALKER BRIDGE, NY, SUITE G
 WALKER, MICHIGAN 49344

TUBELITE
 IMPROVED
 LOW PROFILE
 CONVENTIONAL AND INFLATED TYPES

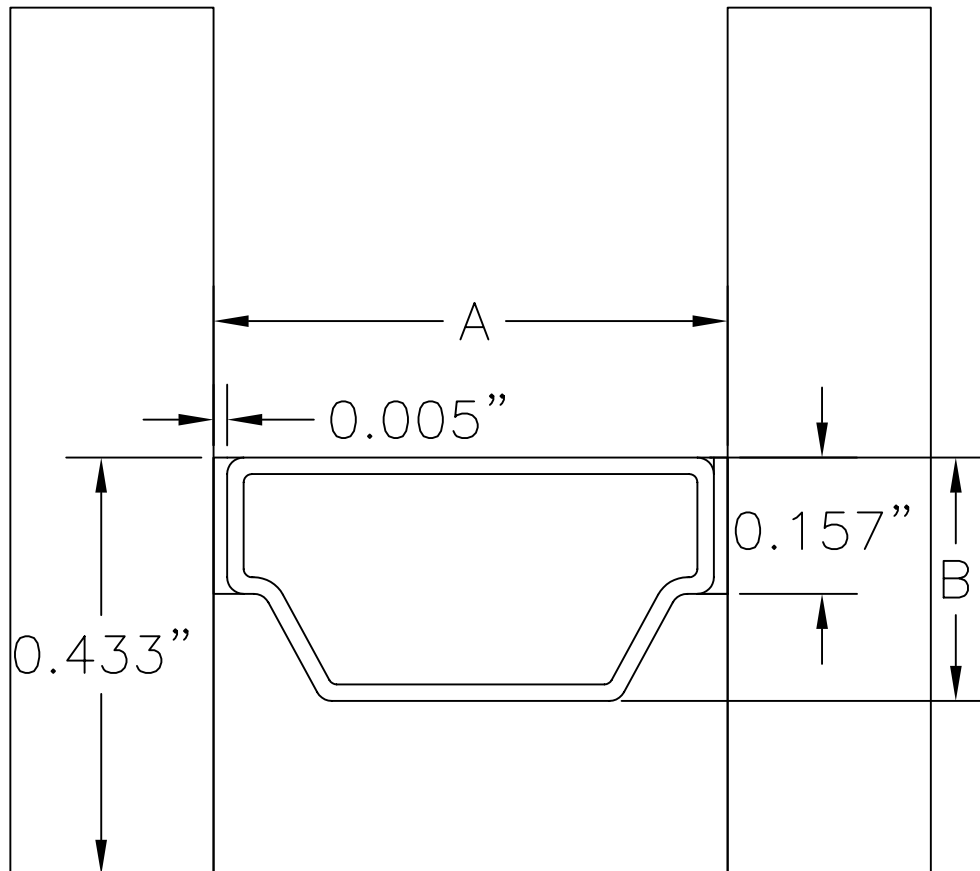
WALL THICKNESS	.075	SECTION S	MAT'L 6063-T5	RATIO 871			
PERIMETER (TOTAL)	15.987	AREA	.639	WGT/FT .751			
FACTOR	21	CIRCLE SIZE	2.737	NET VOLUME 1.680			
RXX	.714	SXX	.283	IKX	.326	CKX	1.151
RYX	.460	SYX	.112	IYX	.135	CYX	1.203

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

REV	DATE	DESCRIPTION
06/25/00		RELEASED FOR TOOLING
09/15/00		PART NUMBER WAS E308004
02/13/02		PART NUMBER WAS E308044

DRN	DATE	BY	SCALE	NOTED	PRODUCT CODE	REV
CRH	08/17/00	APV/DB	120		E3701	

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
Report # A4276-116-45
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