

AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

TUBELITE, INC.

SERIES/MODEL: HW3700
TYPE: Projecting (Awning - Single)

Report No: A4282.01-116-45
Report Date: 10/18/10
Simulation Date: 10/18/10
Report Retention Date: 10/18/14

AAMA 507-07 THERMAL PERFORMANCE REPORT

Rendered to:

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

Report No: A4282.01-116-45
Report Date: 10/18/10
Simulation Date: 10/18/10
Report Retention Date: 10/18/14

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 HW3700 - 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*

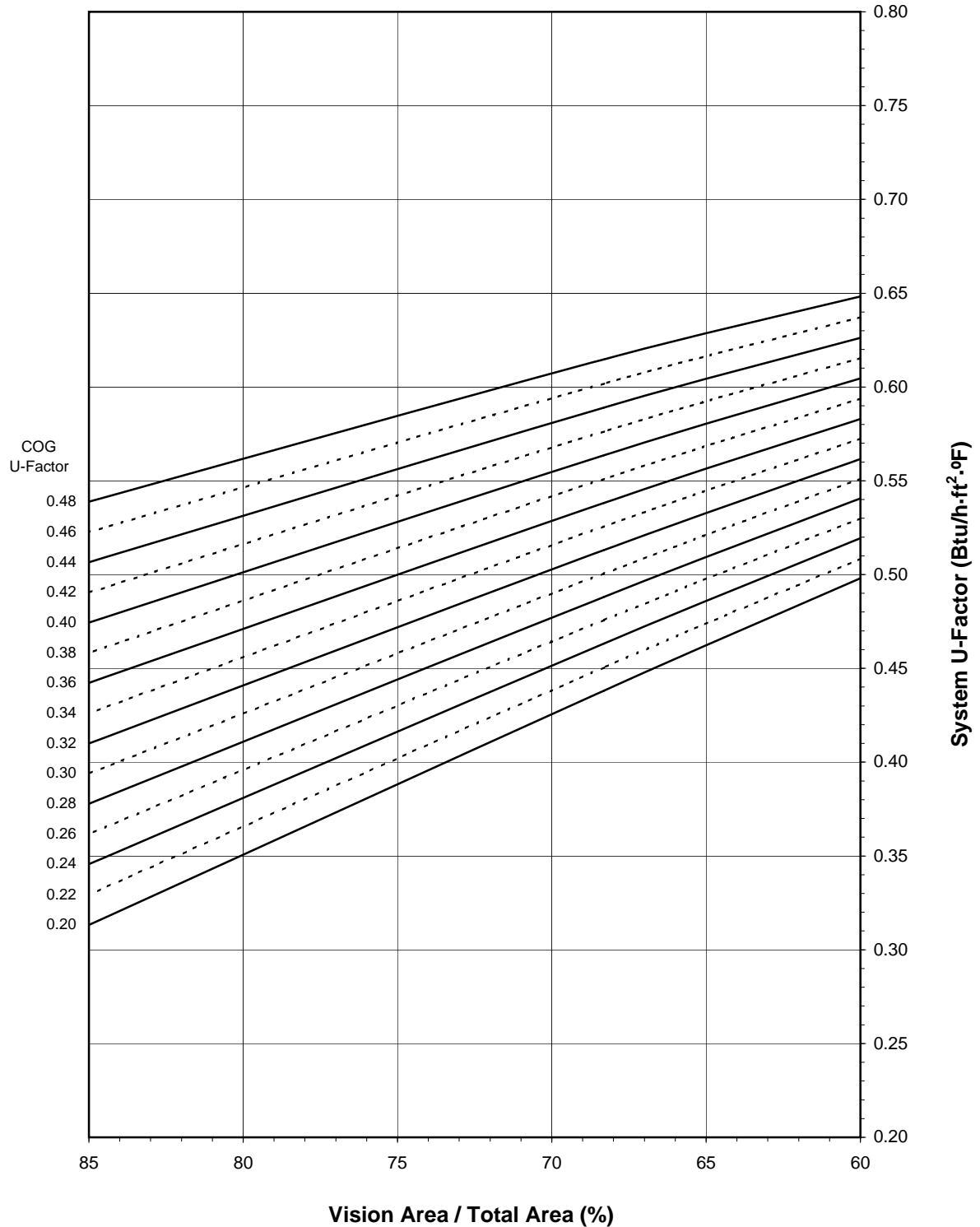
NFRC 200-2010, *Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*

Simulation Specimen Description:

Series/Model: HW3700
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 T7962, dated 10/8/10

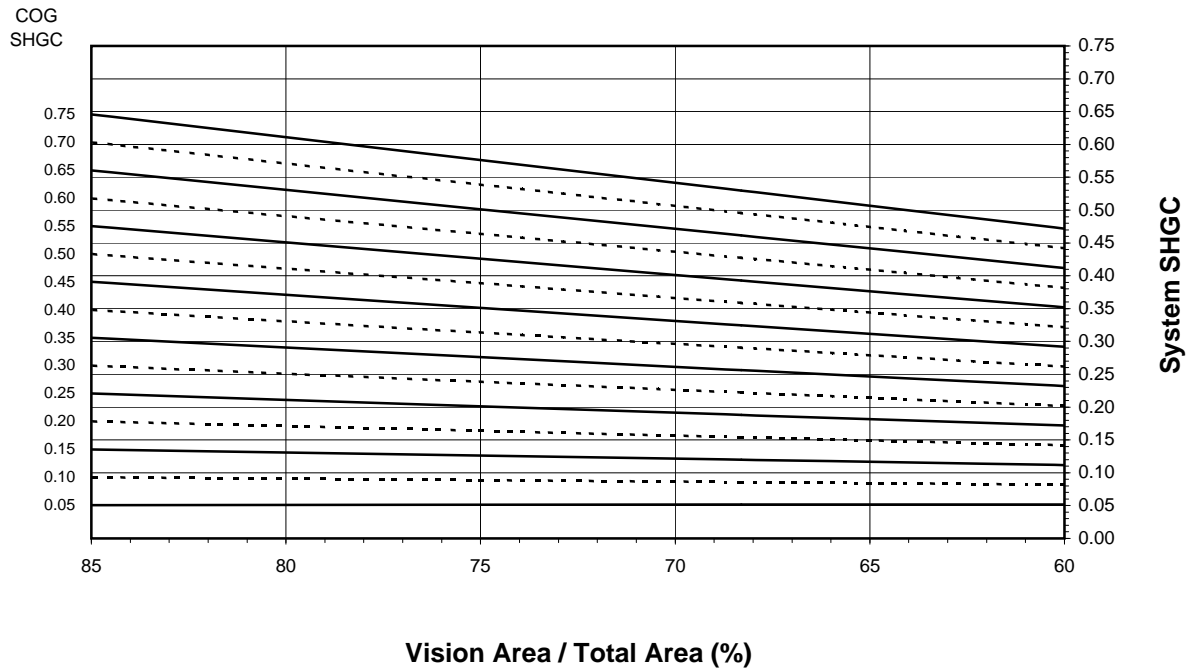
Tubelite, Inc.
HW3700 - Projecting (Awning - Single)

System U-Factor vs. Percentage of Vision Area

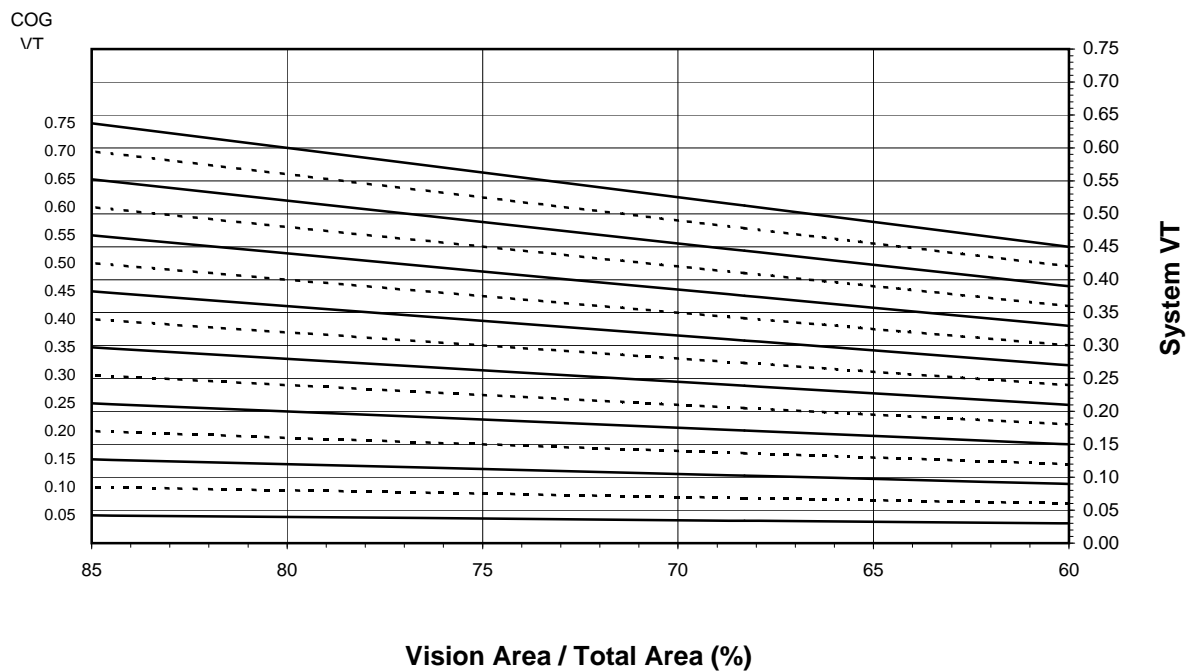


Tubelite, Inc.
HW3700 - Projecting (Awning - Single)

System SHGC vs. Percentage of Vision Area



System VT vs. Percentage of Vision Area



Tubelite, Inc.
HW3700 - 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	0.53
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	0.46
0.60	0.43
0.55	0.39
0.50	0.36
0.45	0.32
0.40	0.29
0.35	0.26
0.30	0.22
0.25	0.19
0.20	0.15
0.15	0.12
0.10	0.09
0.05	0.05

Size Specific VT Matrix*

Center of Glass VT	Overall VT
0.75	0.51
0.70	0.48
0.65	0.44
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	0.20
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 68.3% 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
							45.77" by 18.31"	59.06" by 23.62"	129.80" by 51.92"
1	0.48	43.7	Head	2.8731	0.8457	0.5401	0.6482	0.6147	0.5388
			R Jamb	2.8731	0.8590	0.5400			
			L Jamb	2.8731	0.8590	0.5400			
			Sill	2.8731	0.8384	0.5400			
2	0.46	44.8	Head	2.8731	0.8449	0.5260	0.6372	0.6018	0.5227
			R Jamb	2.8731	0.8580	0.5259			
			L Jamb	2.8731	0.8580	0.5259			
			Sill	2.8731	0.8376	0.5258			
3	0.44	45.8	Head	2.8731	0.8443	0.5119	0.6263	0.5890	0.5066
			R Jamb	2.8731	0.8574	0.5118			
			L Jamb	2.8731	0.8574	0.5118			
			Sill	2.8731	0.8369	0.5117			
4	0.42	46.8	Head	2.8731	0.8436	0.4979	0.6154	0.5762	0.4905
			R Jamb	2.8731	0.8567	0.4981			
			L Jamb	2.8731	0.8567	0.4981			
			Sill	2.8731	0.8363	0.4977			
5	0.40	47.9	Head	2.8731	0.8430	0.4840	0.6046	0.5635	0.4744
			R Jamb	2.8731	0.8560	0.4842			
			L Jamb	2.8731	0.8560	0.4842			
			Sill	2.8731	0.8356	0.4840			
6	0.38	48.9	Head	2.8731	0.8424	0.4703	0.5938	0.5509	0.4583
			R Jamb	2.8731	0.8554	0.4705			
			L Jamb	2.8731	0.8554	0.4705			
			Sill	2.8731	0.8350	0.4703			
7	0.36	50.0	Head	2.8731	0.8418	0.4565	0.5830	0.5383	0.4422
			R Jamb	2.8731	0.8548	0.4568			
			L Jamb	2.8731	0.8548	0.4568			
			Sill	2.8731	0.8344	0.4565			
8	0.34	51.0	Head	2.8731	0.8413	0.4430	0.5724	0.5257	0.4262
			R Jamb	2.8731	0.8542	0.4433			
			L Jamb	2.8731	0.8542	0.4433			
			Sill	2.8731	0.8338	0.4430			
9	0.32	52.0	Head	2.8731	0.8407	0.4293	0.5617	0.5131	0.4101
			R Jamb	2.8731	0.8537	0.4296			
			L Jamb	2.8731	0.8537	0.4296			
			Sill	2.8731	0.8332	0.4294			
10	0.30	53.1	Head	2.8731	0.8402	0.4159	0.5511	0.5006	0.3940
			R Jamb	2.8731	0.8531	0.4162			
			L Jamb	2.8731	0.8531	0.4162			
			Sill	2.8731	0.8326	0.4160			
11	0.28	54.2	Head	2.8731	0.8396	0.4024	0.5405	0.4881	0.3779
			R Jamb	2.8731	0.8525	0.4028			
			L Jamb	2.8731	0.8525	0.4028			
			Sill	2.8731	0.8321	0.4025			

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
							45.77" by 18.31"	59.06" by 23.62"	129.80" by 51.92"
12	0.26	55.2	Head	2.8731	0.8391	0.3890	0.5300	0.4757	0.3618
			R Jamb	2.8731	0.8520	0.3894			
			L Jamb	2.8731	0.8520	0.3894			
			Sill	2.8731	0.8315	0.3891			
13	0.24	56.3	Head	2.8731	0.8386	0.3757	0.5194	0.4632	0.3457
			R Jamb	2.8731	0.8515	0.3761			
			L Jamb	2.8731	0.8515	0.3761			
			Sill	2.8731	0.8310	0.3758			
14	0.22	57.3	Head	2.8731	0.8354	0.3619	0.5085	0.4504	0.3294
			R Jamb	2.8731	0.8510	0.3629			
			L Jamb	2.8731	0.8510	0.3629			
			Sill	2.8731	0.8305	0.3626			
15	0.20	58.4	Head	2.8731	0.8349	0.3487	0.4980	0.4381	0.3133
			R Jamb	2.8731	0.8505	0.3496			
			L Jamb	2.8731	0.8505	0.3496			
			Sill	2.8731	0.8300	0.3493			

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
A4282.01-116-45

Attachments (pages): This report is complete only when all attachments listed are included
Appendix A: Drawings and Bills of Material (5)

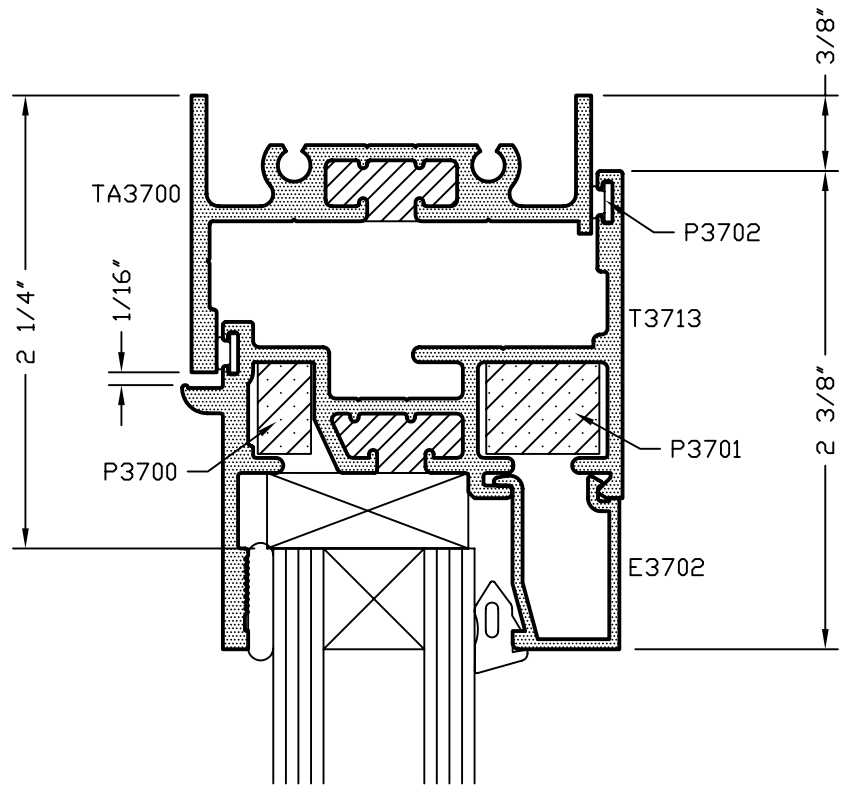
Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
.01 R0	10/18/2010	All	Original Report Issue



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

ATI
Report # A4282-116-45
Date 10/18/10
Simulator *Ken Lamb*



TUBELITE®
 STOREFRONT, CURTAINWALL & ENTRANCES
 DEPENDABLE

HW3700 HOPPER VENT WINDOW
 THERMAL PERFORMANCE TEST
 HEAD DETAIL

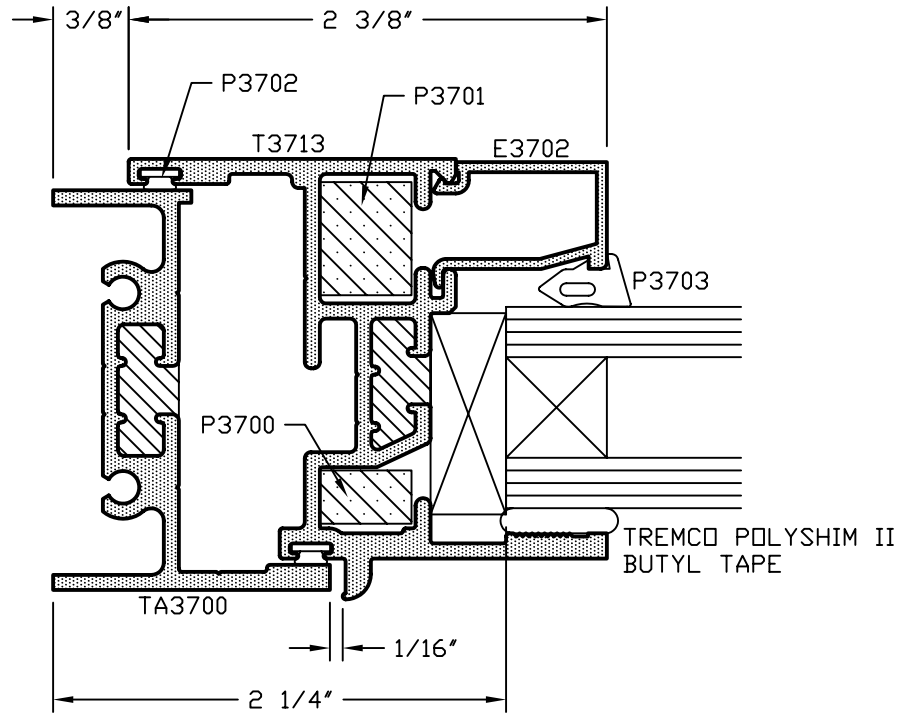
DRAWN BY JEM	DRWG DATE 10/08/10	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 120	T962-1		

ATI

Report # A4282-116-45

Date 10/18/10

Simulator *Ken Lamb*

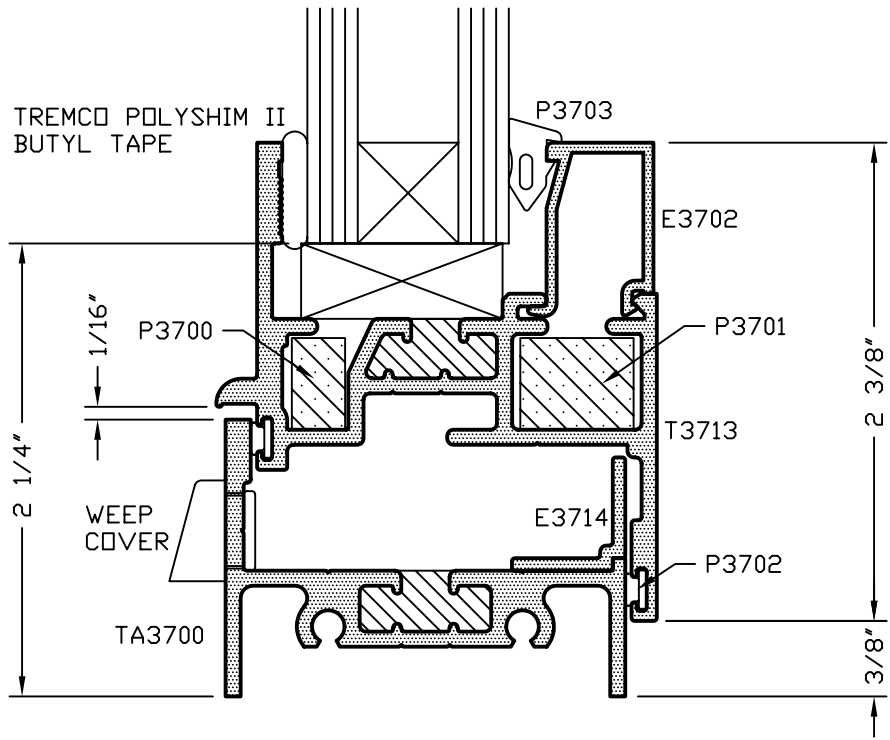


TUBELITE[®]
 STOREFRONT, CURTAINWALL & ENTRANCES
DEPENDABLE

HW3700 HOPPER VENT WINDOW
 THERMAL PERFORMANCE TEST
 JAMB DETAIL

DRAWN BY JEM	DRWG DATE 10/08/10	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 120	T962-2		

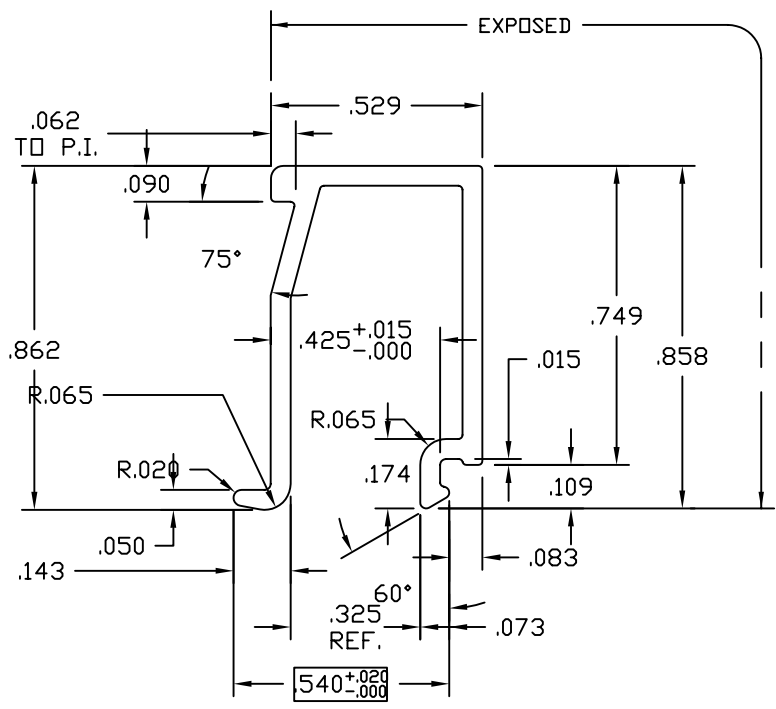
ATI
 Report # A4282-116-45
 Date 10/18/10
 Simulator Ken Lamb



TUBELITE[®]
 STOREFRONT, CURTAINWALL & ENTRANCES
 DEPENDABLE

HW3700 HOPPER VENT WINDOW
 THERMAL PERFORMANCE TEST
 SILL DETAIL

DRAWN BY JEM	DRWG DATE 10/08/10	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 120	T962-3		



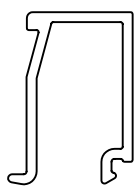
TWO TIMES SCALE

ATI

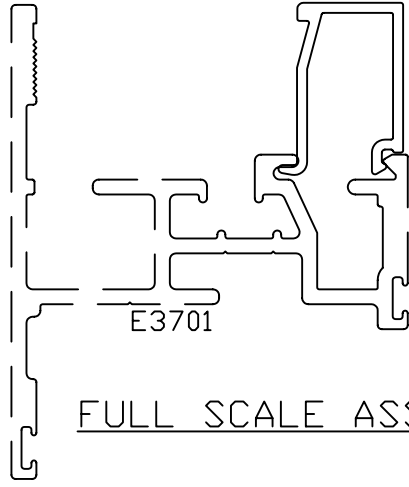
Report # A4282-116-45

Date 10/18/10

Simulator *Ken Lamb*



FULL SCALE



FULL SCALE ASSEMBLY

MATES WITH E3701

© 2006 TUBELITE INC. ALL RIGHTS RESERVED
 ALUMINUM ASSOCIATION STANDARD TOLERANCES APPLY UNLESS NOTED
 ALL UNSPECIFIED RADII .015
 * INDICATES .031 RADIUS



3056 WALKER RIDGE NW, SUITE G
 WALKER, MICHIGAN 49544

WALL 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	

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

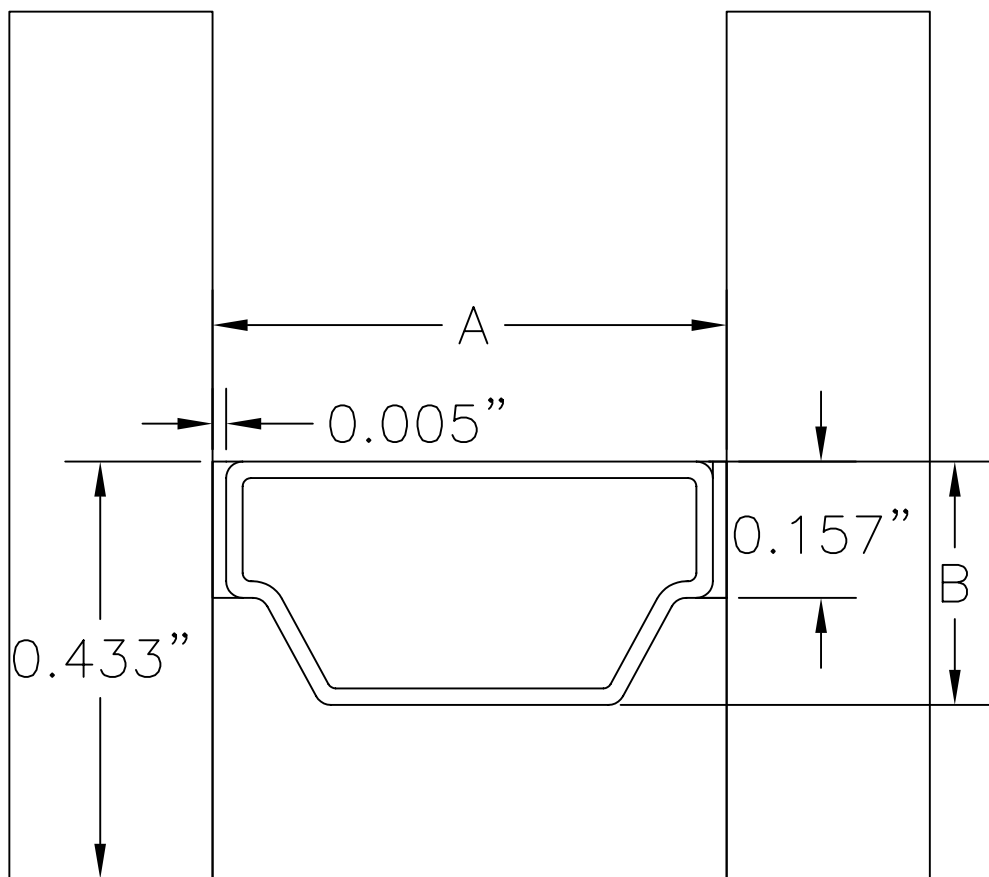
GLASS STOP FOR 1" GLASS VENT WINDOWS

DENOTES CRITICAL DIMENSION
 ALL DIES PROPERTY OF TUBELITE

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

DRAWN BY CRH	DRWG DATE 08/17/00	APPV'D BY	DATE APPV'D
DWG SCALE NOTED	PRODUCT CODE 120	E3702	
			REV

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 # A4282-116-45
Date 10/18/10
Simulator Ken Land