

**AAMA 507-03 THERMAL PERFORMANCE REPORT**

**Rendered to:**

**TUBELITE, INC.**

**SERIES/MODEL: 400 Series CW (E4TB223)**

**TYPE: Glazed Wall System**

**Report No: 67784.01-116-45**  
**Report Date: 09/18/06**

## AAMA 507-03 THERMAL PERFORMANCE REPORT

Rendered to:

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

Report No: 67784.01-116-45  
Report Date: 09/18/06

### 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 400 Series CW (E4TB223) Glazed Wall System. The thermal performance ratings were determined in accordance with AAMA 507-03, *Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Building*.

### Reference Documents:

*AAMA 507-03, Standard Practice for Determining the Thermal Performance Characteristics of Fenestration Systems Installed in Commercial Buildings*

*NFRC 100-2001, Procedure for Determining Fenestration Product U-Factors*

*NFRC 200-2001, Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence*

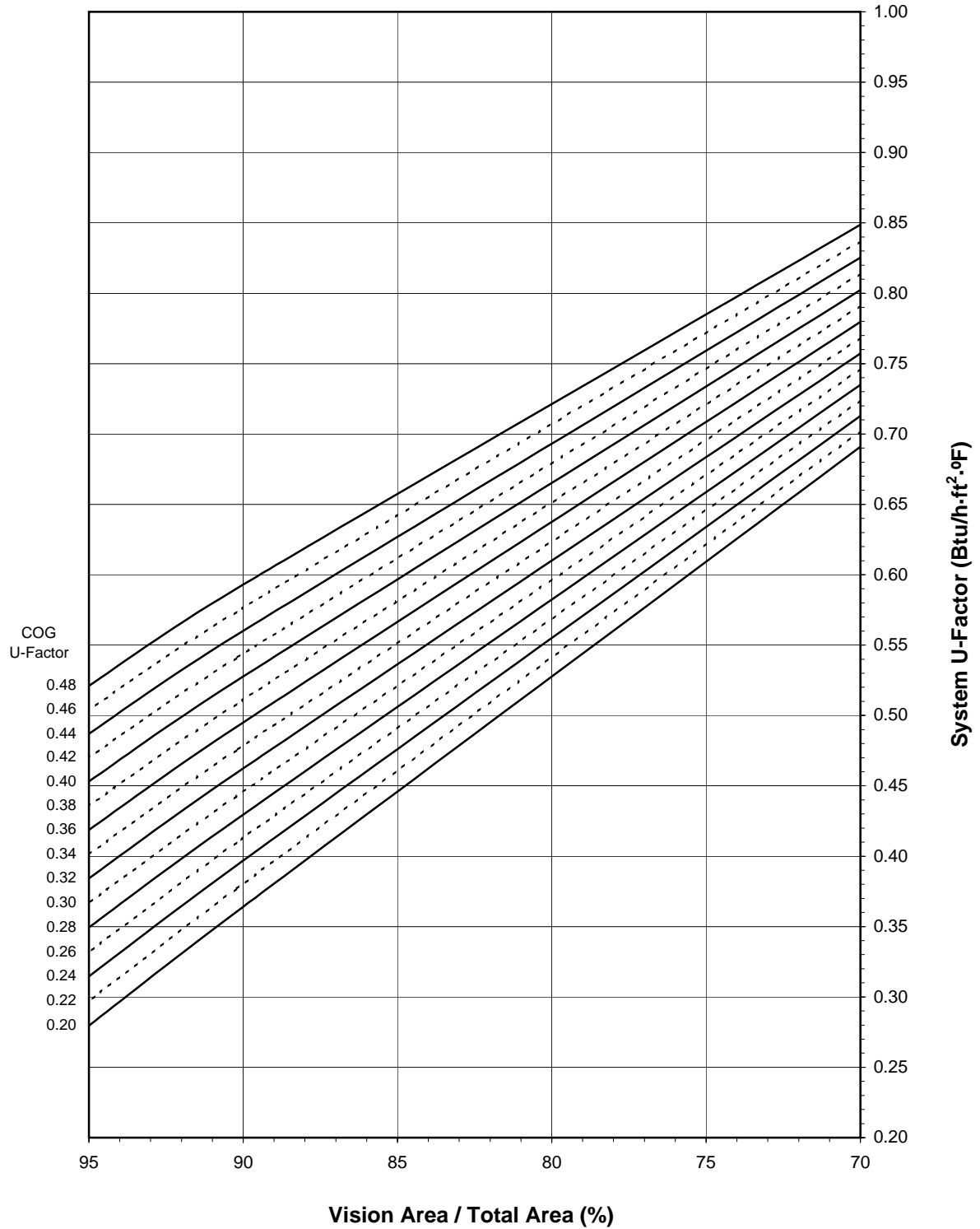
*NFRC Technical Interpretation TI-2003-12, Curtain Wall Simulation*

### Simulation Specimen Description:

<b>Series/Model:</b>	400 Series CW (E4TB223)
<b>Type:</b>	Glazed Wall System
<b>Frame Material:</b>	Aluminum Framing System
<b>Specimen Size:</b>	2000mm wide by 2000mm high (78-3/4" by 78-3/4")
<b>Configuration:</b>	Two vision lites separated by one intermediate vertical
<b>Drawing Reference:</b>	Tubelite Drawing T931, dated 9/13/06

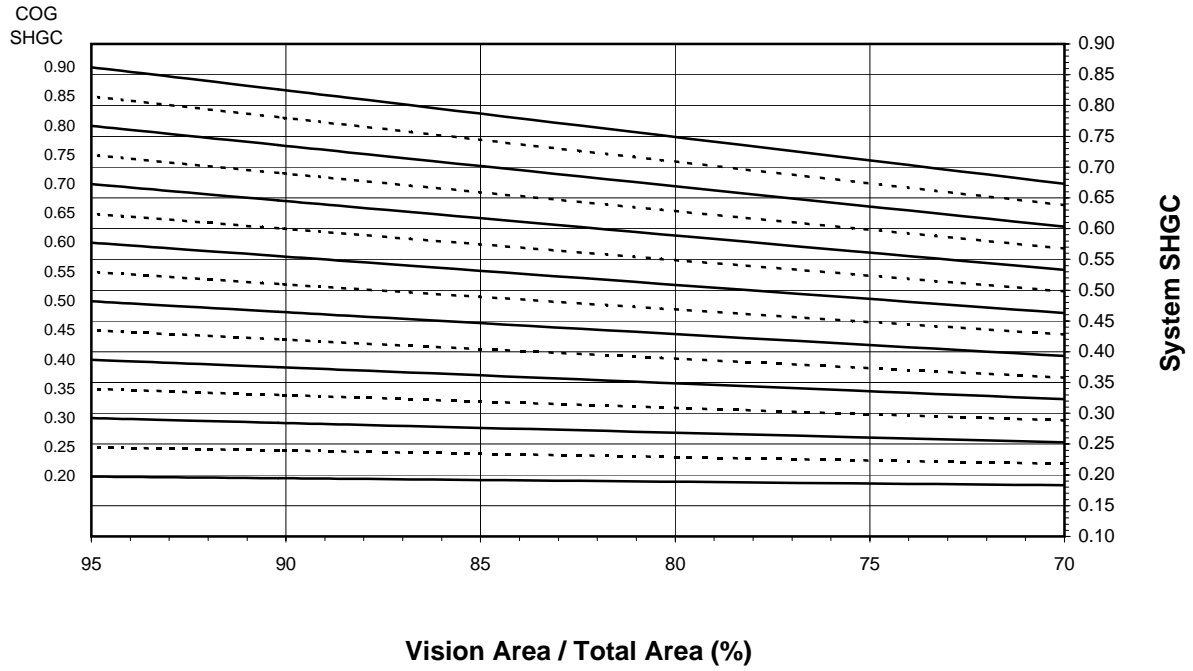
**Tubelite, Inc.**  
**400 Series CW (E4TB223) Glazed Wall System**

**System U-Factor vs. Percentage of Vision Area**

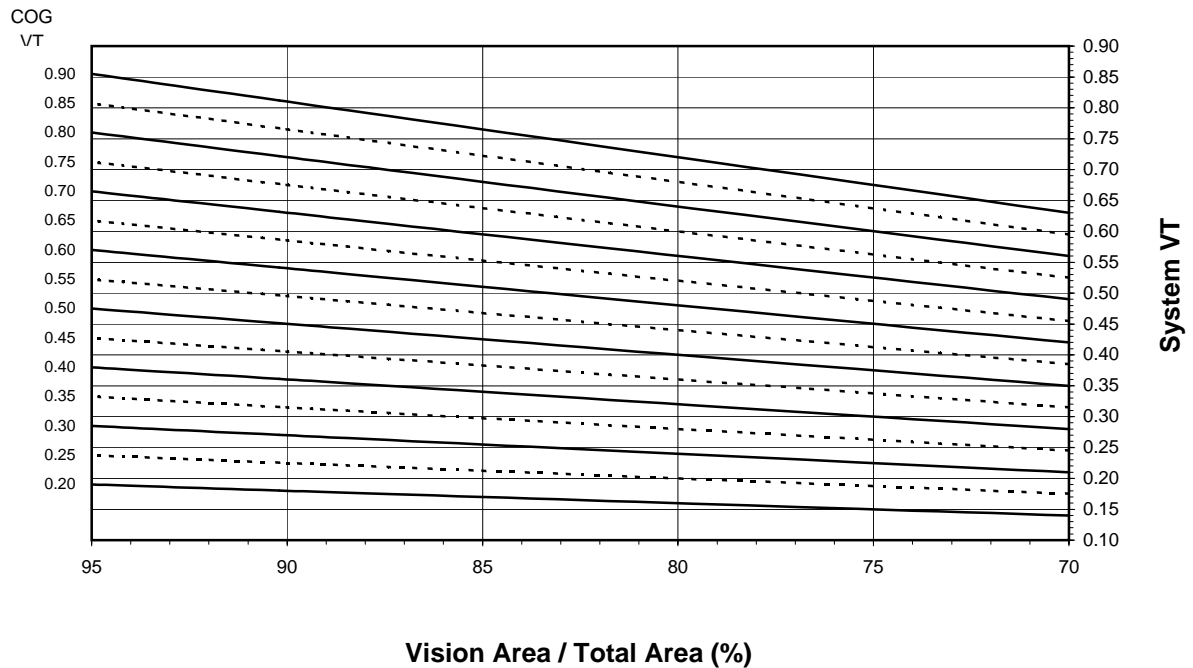


**Tubelite, Inc.**  
**400 Series CW (E4TB223) Glazed Wall System**

**System SHGC vs. Percentage of Vision Area**



**System VT vs. Percentage of Vision Area**



**Tubelite, Inc.**  
**400 Series CW (E4TB223) Glazed Wall System**

**Size Specific U-Factor Matrix\***

Glazing Option	Center of Glass U-Factor	Overall U-Factor
1	0.48	0.59
2	0.46	0.57
3	0.44	0.56
4	0.42	0.54
5	0.40	0.52
6	0.38	0.51
7	0.36	0.49
8	0.34	0.48
9	0.32	0.46
10	0.30	0.44
11	0.28	0.43
12	0.26	0.41
13	0.24	0.39
14	0.22	0.38
15	0.20	0.36

**Size Specific SHGC Matrix\***

Center of Glass SHGC	Overall SHGC
0.90	0.83
0.85	0.78
0.80	0.74
0.75	0.69
0.70	0.65
0.65	0.60
0.60	0.56
0.55	0.51
0.50	0.47
0.45	0.42
0.40	0.37
0.35	0.33
0.30	0.28
0.25	0.24
0.20	0.19

**Size Specific VT Matrix\***

Center of Glass VT	Overall VT
0.90	0.81
0.85	0.77
0.80	0.72
0.75	0.68
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

\*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 90.2% 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 100-2001	95% Vision Area
							24.35" by 24.35"	78.74" by 78.74"	155.51" by 155.51"
1	0.48	43.7	Head	1.3116	1.6913	0.4560	0.8488	0.5900	0.5212
			Vertical	2.6240	1.7655	0.4531			
			Sill	1.3123	1.6903	0.4559			
2	0.46	44.8	Head	1.3116	1.6897	0.4423	0.8370	0.5735	0.5042
			Vertical	2.6240	1.7638	0.4395			
			Sill	1.3123	1.6887	0.4422			
3	0.44	45.8	Head	1.3116	1.6887	0.4288	0.8254	0.5572	0.4871
			Vertical	2.6240	1.7629	0.4260			
			Sill	1.3123	1.6877	0.4287			
4	0.42	46.8	Head	1.3116	1.6877	0.4155	0.8139	0.5409	0.4703
			Vertical	2.6240	1.7621	0.4127			
			Sill	1.3123	1.6868	0.4153			
5	0.40	47.9	Head	1.3116	1.6869	0.4020	0.8024	0.5245	0.4532
			Vertical	2.6240	1.7613	0.3993			
			Sill	1.3123	1.6858	0.4019			
6	0.38	48.9	Head	1.3116	1.6861	0.3887	0.7910	0.5082	0.4361
			Vertical	2.6240	1.7606	0.3861			
			Sill	1.3123	1.6850	0.3885			
7	0.36	50.0	Head	1.3116	1.6854	0.3755	0.7797	0.4918	0.4189
			Vertical	2.6240	1.7601	0.3728			
			Sill	1.3123	1.6843	0.3753			
8	0.34	51.0	Head	1.3116	1.6848	0.3622	0.7684	0.4753	0.4016
			Vertical	2.6240	1.7596	0.3596			
			Sill	1.3123	1.6837	0.3621			
9	0.32	52.0	Head	1.3116	1.6842	0.3492	0.7572	0.4590	0.3844
			Vertical	2.6240	1.7591	0.3466			
			Sill	1.3123	1.6831	0.3490			
10	0.30	53.6	Head	1.3116	1.6837	0.3362	0.7461	0.4426	0.3671
			Vertical	2.6240	1.7588	0.3336			
			Sill	1.3123	1.6826	0.3360			
11	0.28	54.1	Head	1.3116	1.6833	0.3232	0.7350	0.4262	0.3496
			Vertical	2.6240	1.7584	0.3207			
			Sill	1.3123	1.6822	0.3230			
12	0.26	55.2	Head	1.3116	1.6830	0.3102	0.7239	0.4097	0.3321
			Vertical	2.6240	1.7582	0.3078			
			Sill	1.3123	1.6818	0.3101			
13	0.24	56.3	Head	1.3116	1.6827	0.2973	0.7129	0.3933	0.3148
			Vertical	2.6240	1.7581	0.2949			
			Sill	1.3123	1.6815	0.2972			
14	0.22	57.3	Head	1.3116	1.6825	0.2845	0.7020	0.3769	0.2973
			Vertical	2.6240	1.7580	0.2821			
			Sill	1.3123	1.6813	0.2843			
15	0.20	58.4	Head	1.3116	1.6823	0.2717	0.6911	0.3605	0.2798
			Vertical	2.6240	1.7580	0.2693			
			Sill	1.3123	1.6812	0.2715			

Detailed drawings, simulation data disks, and a copy of this report will be retained by ATI for a period of four years. The above results are the exclusive property of the client so named herein and are applicable to the sample simulated. This report does not constitute an opinion or endorsement by this laboratory. This report may not be reproduced except in full without the approval of ATI.

For ARCHITECTURAL TESTING, INC.:

SIMULATED BY:

REVIEWED BY:

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Kevin S. Louder  
Project Engineer

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

KSL:ksl  
67784.01-116-45

Attachments (pages):

Appendix A: Drawings and Bills of Material (3)

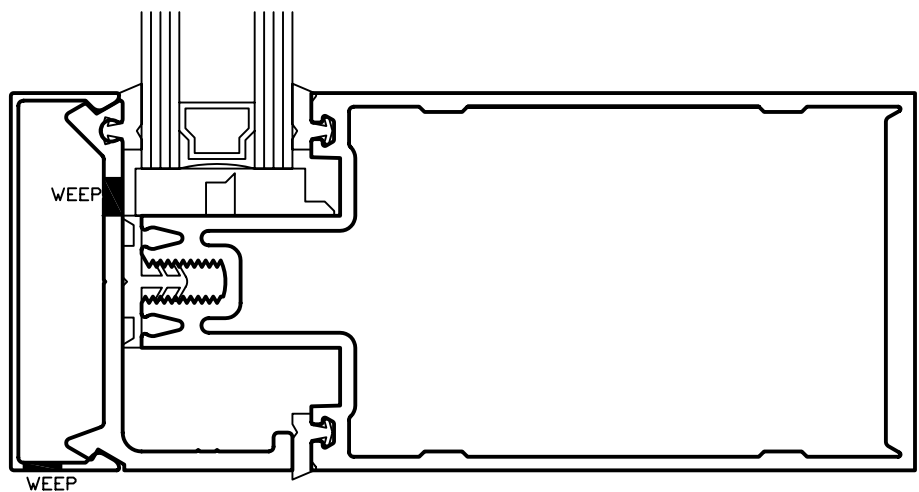
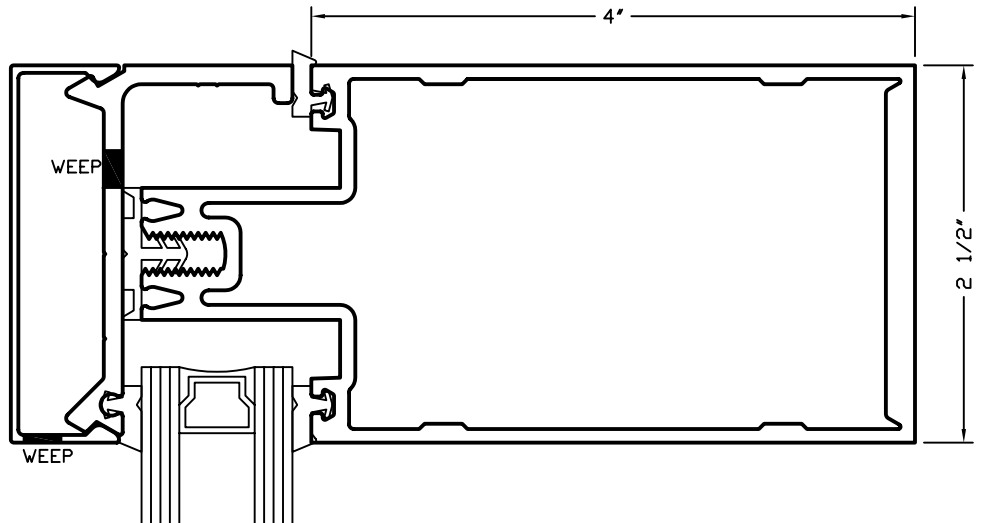
### Revision Log

<b><u>Rev. #</u></b>	<b><u>Date</u></b>	<b><u>Page(s)</u></b>	<b><u>Revision(s)</u></b>
.01 R0	9/18/2006	All	Original Report Issue

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

**Appendix A**

T931-1



AAMA 503-07 THERMAL SIMULATION

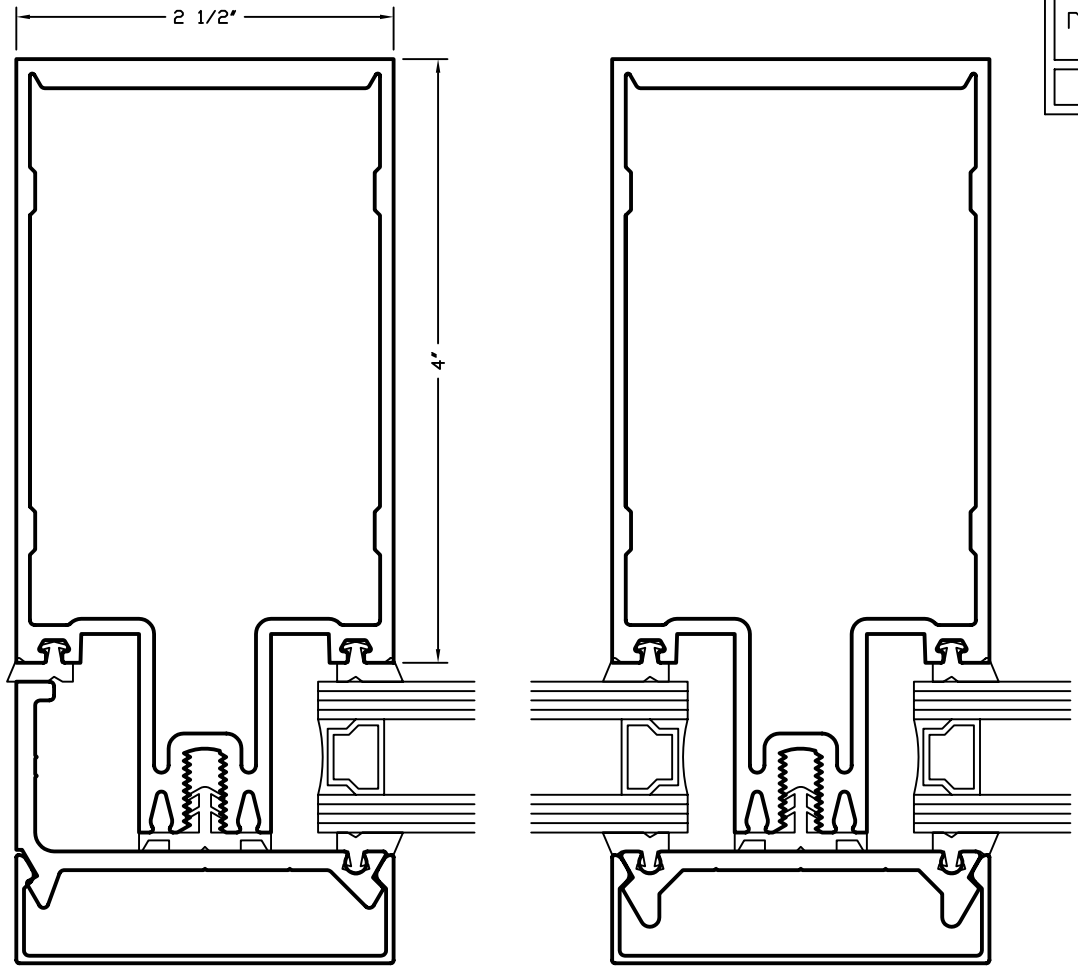
**TUBELITE**<sup>®</sup>  
 STOREFRONT, CURTAINWALL & ENTRANCES  
 DEPENDABLE

400 SERIES CW (E4TB223)  
 AAMA 507-03 THERMAL SIMULATION  
 HEAD / SILL DETAILS

DRAWN BY	LDD	DRWG DATE	09/13/06	APPV'D BY		DATE APPV'D	
DRWG SCALE	1"=1"	PRODUCT CODE	290	T931-1		REV	

**ATI**  
 Report # 67784  
 Date 9/18/06  
 Simulator *Ron Lamb*

T931-2



AAMA 503-07 THERMAL SIMULATION

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 DEPENDABLE

400 SERIES CW (E4TB223)  
 AAMA 507-03 THERMAL SIMULATION  
 JAMB/INTERMEDIATE VERTICAL DETAILS

DRAWN BY	LDD	DRWG DATE	09/13/06	APPV'D BY		DATE APPV'D	
DRWG SCALE	1"=1"	PRODUCT CODE	290	T931-2		REV	

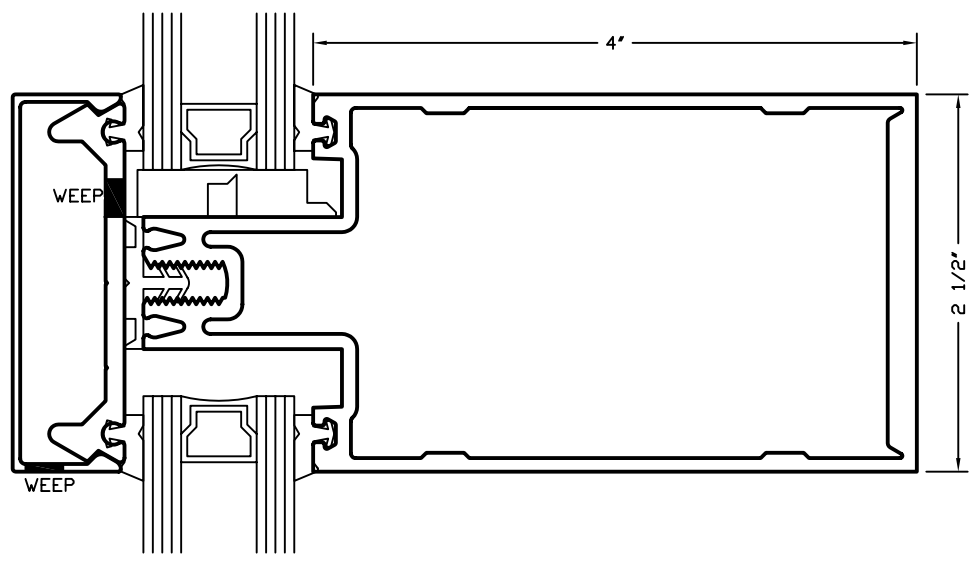
**ATI**

Report # 67784

Date 9/18/06

Simulator *Ron Lamb*

T931-3



AAMA 503-07 THERMAL SIMULATION

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400 SERIES CW (E4TB223)  
 AAMA 507-03 THERMAL SIMULATION  
 INTERMEDIATE HORIZONTAL

DRAWN BY LDD	DRWG DATE 09/13/06	APPV'D BY	DATE APPV'D	REV
DRWG SCALE 1"=1"	PRODUCT CODE 290	T931-3		

**ATI**  
 Report # 67784  
 Date 9/18/06  
 Simulator *Ron Lamb*