Intertek | Architectural Testing

AAMA 1503-09 THERMAL PERFORMANCE
TEST REPORT

Rendered to:

C.R. LAURENCE CO., INC.

SERIES/MODEL: 45X - High Performance Dual Thermally Broken Storefront
TYPE: Glazed Wall Systems (Site-built)

Summary of Results			
Thermal Transmittance (U-Factor)			0.31
Condensation Resistance Factor - Frame (CRF_f)			68
Condensation Resistance Factor - Glass (CRF_g)			70
Unit Size:		78-3/4" x 78-3/4"	
Layer 1:	1/4"	PPG Solarban z75 (e=0.018*, #2)	
Gap 1:	0.53"	TS-D: Technoform TGI Wave Spacer	90% Argon*
Layer 2:	1/4"	Clear	

Reference must be made to Report No. F4786.05-116-46, dated 04/27/16 for complete test specimen description and data.

130 Derry Court
York, PA 17406

www.archtest.com . www.intertek.com/building

p. 717.764.7700
f. 717.764.4129

Intertek | Architectural Testing

AAMA 1503-09 THERMAL PERFORMANCE TEST REPORT

Rendered to:

C.R. LAURENCE CO., INC.
2503 E. Vernon Avenue
Los Angeles, California 90058-1826

Report Number:	F4786.05-116-46
Test Date:	03/11/16
Report Date:	04/27/16

Test Sample Identification:

Series/Model: 45X - High Performance Dual Thermally Broken Storefront

Type: Glazed Wall Systems (Site-built)

Test Sample Submitted by: Oldcastle BuildingEnvelope - Terrell, Texas

This report is a reissue of the original Report No. F4786.02-116-46. This report is reissued in the name of C.R. Laurence Co., Inc. through written authorization of Oldcastle BuildingEnvelope.

Test Procedure: The condensation resistance factor (CRF) and thermal transmittance (U) were determined in accordance with AAMA 1503-09, *Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections*

1. Average warm side ambient temperature	69.80 F
2. Average cold side ambient temperature	-0.41 F
3. 15 mph dynamic wind applied to test specimen exterior.	
4. 0.0" $\pm$0.04" static pressure drop across specimen.	

Test Results Summary:

1. Condensation resistance factor - Frame (CRF_f)	68
Condensation resistance factor - Glass (CRF_g)	70
2. Thermal transmittance due to conduction (U)	0.31
(U-factors expressed in Btu/hr·ft^2·F)	

Test Sample Description:

Frame:

Material:	AT (0.22"): Aluminum with Thermal Breaks - All Members		
Size:	78-3/4" x 78-3/4"		
Daylight Opening:	36-3/8" x 74-3/4" (x2)	**Glazing Method:**	Exterior
Exterior Color:	Clear	**Exterior Finish:**	Anodized
Interior Color:	Clear	**Interior Finish:**	Anodized
Corner Joinery:	Square Cut / Screws / Sealed		

Glazing Information:

Layer 1:	1/4"	PPG Solarban z75 (e=0.018*, #2)	
Gap 1:	0.53"	TS-D: Technoform TGI Wave Spacer	90% Argon*
Layer 2:	1/4"	Clear	
Gas Fill Method:		Single-Probe Method*	
Desiccant:		Yes	

**Stated per Client/Manufacturer*
N/A Non-Applicable

Test Sample Description: (Continued)

Weatherstripping:

Description	Quantity	Location
FG-1133 gasket	1 row	Interior and exterior glazing perimeter

Hardware:

Description	Quantity	Location
Aluminum glass stop	2	Exterior sill
AT (1.38") vertical filler	3	Verticals

Drainage:

Drainage Method	Size	Quantity	Location
No visible weeps			

Test Duration:

1. The environmental systems were started at 17:48 hours, 03/10/16.

2. The thermal performance test results were derived from 02:04 hours, 03/11/16 to 06:04 hours, 03/11/16.

Condensation Resistance Factor (CRF):

The following information, condensed from the test data, was used to determine the condensation resistance factor:

T_h	=	Warm side ambient air temperature	69.80 F
T_c	=	Cold side ambient air temperature	-0.41 F
FT_p	=	Average of pre-specified frame temperatures (14)	47.78 F
FT_r	=	Average of roving thermocouples (4)	39.20 F
W	=	$[(FT_p - FT_r) / (FT_p - (T_c + 10))] \times 0.40$	0.090
FT	=	$FT_p(1-W) + W (FT_r)$ = Frame Temperature	47.01 F
GT	=	Glass Temperature	48.80 F
CRF_g	=	Condensation resistance factor – Glass	70
		$CRF_g = (GT - T_c) / (T_h - T_c) \times 100$	
CRF_f	=	Condensation resistance factor – Frame	68
		$CRF_f = (FT - T_c) / (T_h - T_c) \times 100$	

The CRF number was determined to be 68 (on the size as reported). When reviewing this test data, it should be noted that the frame temperature (FT) was colder than the glass temperature (GT) therefore controlling the CRF number. Refer to the 'CRF Report' page and the 'Thermocouple Location Diagram' page of this report.

Thermal Transmittance (U_c):

T_h	=	Average warm side ambient temperature	69.80	F
T_c	=	Average cold side ambient temperature	-0.41	F
P	=	Static pressure difference across test specimen 15 mph dynamic perpendicular wind at exterior	0.00	psf
Nominal sample area			43.07	ft^2
Total measured input to calorimeter			995.67	Btu/hr
Calorimeter correction			70.54	Btu/hr
Net specimen heat loss			925.13	Btu/hr
U	=	Thermal Transmittance	0.31	$Btu/hr \cdot ft^2 \cdot F$

Glazing Deflection:

	Left Glazing	Right Glazing
Edge Gap Width	0.53"	0.53"
Estimated center gap width upon receipt of specimen in laboratory (after stabilization)	0.47"	0.50"
Center gap width at laboratory ambient conditions on day of testing	0.47"	0.50"
Center gap width at test conditions	0.41"	0.41"

The sample was inspected for the formation of frost or condensation, which may influence the surface temperature measurements. The sample showed no evidence of condensation/frost at the conclusion of the test.

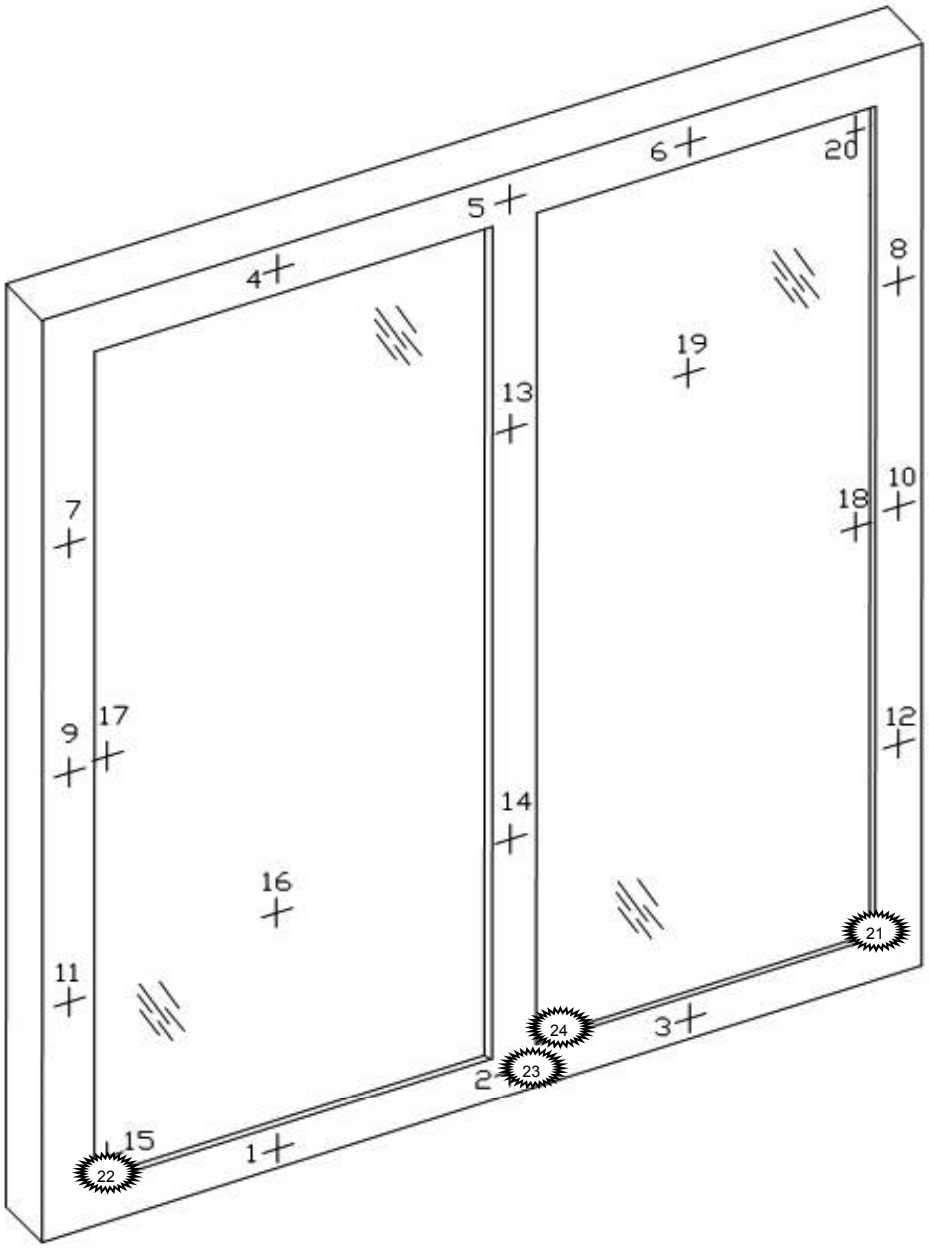
Prior to testing the specimen was sealed with silicone on the interior side and checked for air infiltration per Section 9.3.4.

Required annual calibrations for the Architectural Testing Inc., an Intertek company ("Intertek-ATI"), 'thermal test chamber' (ICN 000001) in York, Pennsylvania were last conducted in May 2015 in accordance with Intertek-ATI calibration procedure. A CTS Calibration verification was performed June 2015. A Metering Box Wall Transducer and Surround Panel Flanking Loss Characterization was performed July 2015.

CRF Report

Time:	04:04	04:34	05:04	05:34	06:04	AVERAGE
Pre-specified Thermocouples - Frame						
1	43.13	43.12	43.15	43.14	43.17	43.14
2	41.08	41.10	41.08	41.10	41.10	41.09
3	43.36	43.37	43.37	43.36	43.39	43.37
4	52.44	52.42	52.44	52.44	52.42	52.43
5	53.47	53.45	53.46	53.49	53.48	53.47
6	52.44	52.42	52.44	52.44	52.42	52.43
7	51.84	51.89	51.85	51.86	51.87	51.86
8	51.56	51.59	51.65	51.61	51.62	51.61
9	47.84	47.81	47.85	47.83	47.85	47.84
10	47.88	47.87	47.89	47.89	47.90	47.88
11	41.58	41.58	41.61	41.59	41.60	41.59
12	42.40	42.40	42.40	42.39	42.40	42.40
13	54.31	54.33	54.36	54.34	54.34	54.34
14	45.50	45.51	45.51	45.51	45.51	45.51
FT_P	47.77	47.78	47.79	47.78	47.79	47.78
Pre-specified Thermocouples - Glass						
15	36.15	36.19	36.19	36.17	36.14	36.17
16	56.42	56.43	56.39	56.38	56.36	56.40
17	47.46	47.46	47.51	47.49	47.52	47.49
18	48.40	48.43	48.43	48.44	48.40	48.42
19	56.98	56.97	57.01	56.99	56.99	56.99
20	47.32	47.34	47.31	47.35	47.36	47.34
GT	48.79	48.80	48.81	48.80	48.80	48.80
Cold Point (Roving) Thermocouples						
21	37.16	37.16	37.16	37.16	37.16	37.16
22	37.22	37.22	37.22	37.22	37.22	37.22
23	41.10	41.10	41.10	41.10	41.10	41.10
24	41.31	41.31	41.31	41.31	41.31	41.31
FT_R	39.20	39.20	39.20	39.20	39.20	39.20
W	0.09	0.09	0.09	0.09	0.09	0.09
FT	47.00	47.00	47.02	47.01	47.02	47.01
Warm Side - Room Ambient Air Temperature						
	69.80	69.81	69.79	69.80	69.81	69.80
Cold Side - Room Ambient Air Temperature						
	-0.41	-0.40	-0.40	-0.40	-0.37	-0.39
CRF_f	68	68	68	68	68	68
CRF_g	70	70	70	70	70	70

Thermocouple Location Diagram



Cold Point Locations

21. 37.16
22. 37.22
23. 41.10
24. 41.31

This report is a reissue of the original Report No. F4786.02-116-46. This report is reissued in the name of C.R. Laurence Co., Inc. through written authorization of Oldcastle BuildingEnvelope.

Intertek-ATI 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 Intertek-ATI for the entire test record retention period. The test record retention end date for this report is March 11, 2020.

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 specimen tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For INTERTEK-ATI

Digitally Signed by: Ryan P. Moser

Ryan P. Moser
Senior Technician

Digitally Signed by: Shon W. Einsig

Shon W. Einsig
Senior Technician
Individual-In-Responsible-Charge

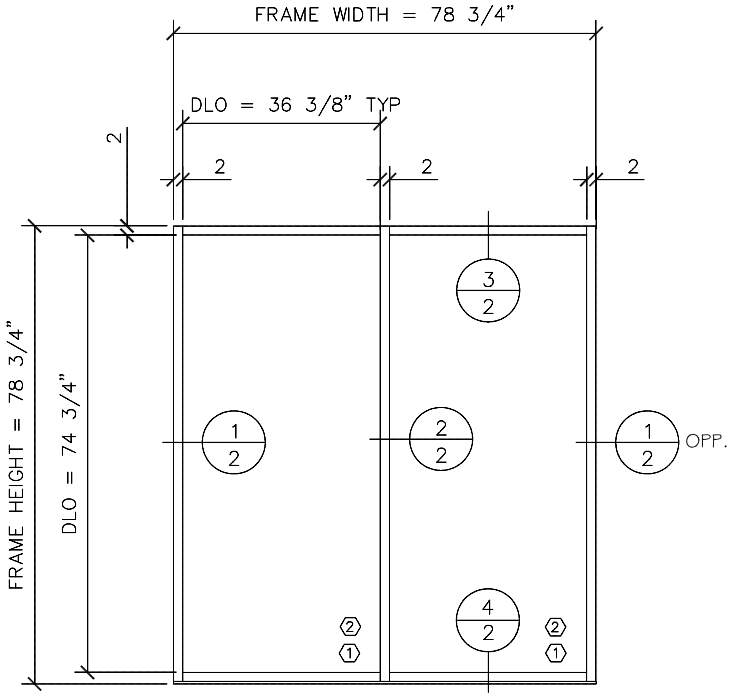
RPM:kmm
F4786.05-116-46

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Drawings (13)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
.05R0	04/27/16	All	Original Report Issue - Reissue of Report No. F4786.02-116-46 in the name of C.R. Laurence Co., Inc..

Appendix A: Drawings



TWO REQUIRED THUS
ONE (1) W/GLASS 1
ONE (1) W/GLASS 2

BILL OF MATERIAL

QTY	PART NO.	DESCRIPTION	LENGTH		NOTES
		EXTRUSIONS			
6	45XVA	Vertical/Jamb	78 3/4"	.	.
2	45XVE	Intermediate Vertical Filler	78 3/4"	.	.
4	45XVE	Head Horizontal	36 3/8"	.	.
4	45XHB	Sill Horizontal		.	.
4	45XHD	Glass Stop	36 3/8"	.	.
		ACCESSORIES			
8	45A3220	SETTING BLOCK	.	.	.
16	45ASF8	#14 X 1" SCREW	.	.	.
.	45A1133	GASKET	.	.	.

GLAZING CHART

SYM	QTY	DESCRIPTION
1	2	37 1/4" X 75 5/8", 1" CLEAR (1/4" CLR TEMP-1/2" ALUM SPCR-1/4" CLR TEMP)
2	2	37 1/4" X 75 5/8", 1" LOW E (1/4" TEMP SUNGLASS-1/2" TECHNOFORM SPCR-1/4" CLR TEMP)

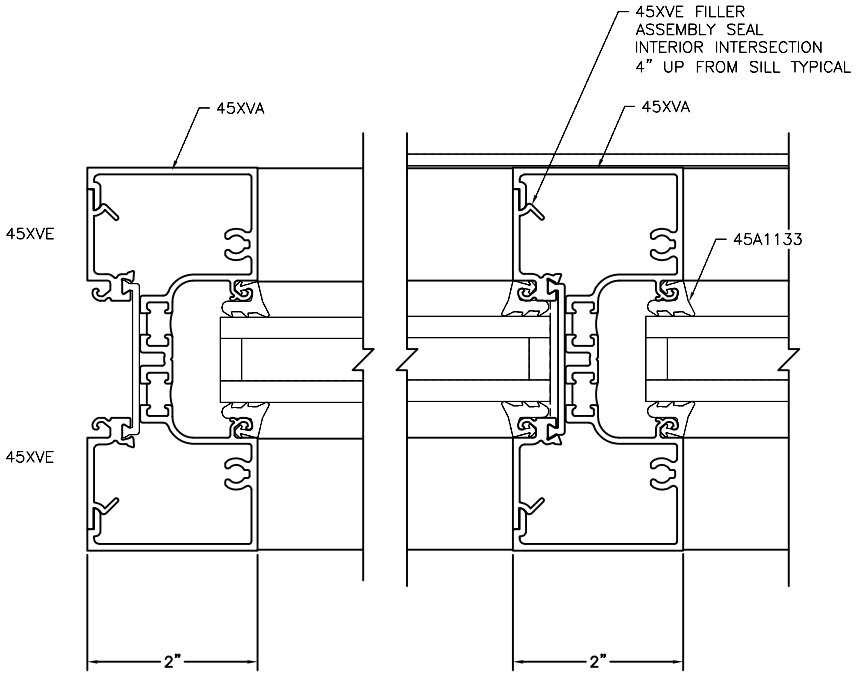
REVISIONS

C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

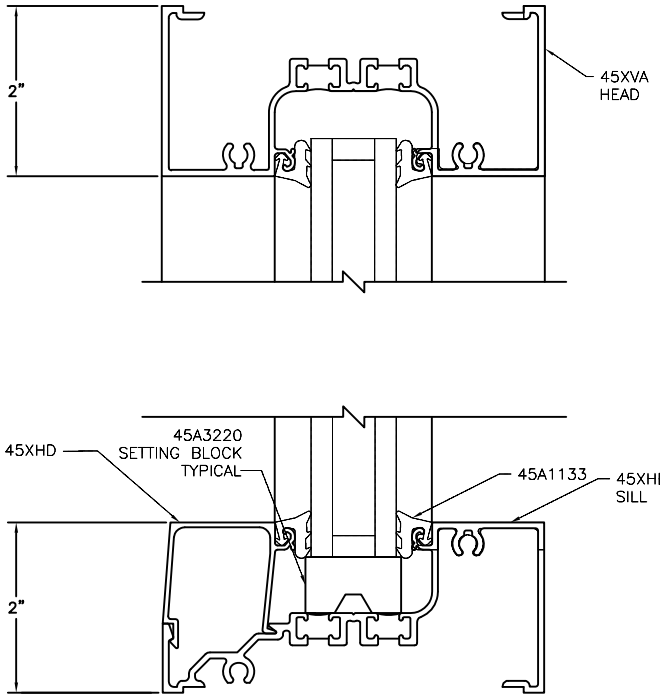
Job Name: CRL/US Aluminum ARCTICFRONT Series 45X–High Performance Dual Thermally Broken Storefront

Glazing Contractor:

DATE: 11/19/2015
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #:



1 2



3 4

REVISIONS

C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2100 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

Job Name: CRL/US Aluminum ARCTICFRONT Series 45X–High Performance Dual Thermally Broken Storefront

Glazing Contractor:

DATE: 11/19/2015
DRAWN BY: GDO
CHECKED BY: XX
SCALE: AS SHOWN
JOB #:

SHT 2 OF 2