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TEST REPORT

Report No.: B3630.02-801-44

Rendered to:

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

PRODUCT TYPE: Aluminum Storefront System with Double Poured Thermal Break
SERIES/MODEL: 45X – High Performance Dual Thermally Broken Store Front

Title	Summary of Results
Design Pressure	±40.10 psf
Air Infiltration	0.01 cfm/ft^2
Water Penetration Resistance Test Pressure	10.00 psf
Uniform Load Structural Test Pressure	±60.15 psf

This report contains in its entirety:
Cover Page: 1 page
Report Body: 8 pages
Drawings: 4 pages

Texas Firm F-11869

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Reference must be made to Report No. B3630.02-801-44, dated 11/04/11 for complete test specimen description and detailed test results

1.0 Report Issued To: C.R. Laurence Co., Inc.
2503 E. Vernon Ave.
Los Angeles, CA 90058-1826

2.0 Test Laboratory: Architectural Testing, Inc.
2865 Market Loop
Southlake, Texas 76092
817-410-7202

3.0 Project Summary:

3.1 Product Type: Aluminum Storefront System With Double Poured Thermal Break

3.2 Series/Model: 45X – High Performance Dual thermally Broken Store Front

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). Test specimen description and results are reported herein.

3.4 Test Dates: 10/31/2011 - 11/01/2011

3.5 Test Location: Architectural Testing, Inc. test facility in Southlake, Texas. Calibration of test equipment was performed by Architectural Testing in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.6 Test Sample Source: The test specimen was provided by the client. Representative samples of the test specimen will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.7 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix A. Any deviations are documented herein or on the drawings.

3.8 List of Official Observers:

Name	Company
Bill Lang	Oldcastle BuildingEnvelope™
Tom Klein	Architectural Testing, Inc.

4.0 Test Method(s):

ASTM E 283-04, *Test Method for Determining Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.*

ASTM E 330-02, *Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

ASTM E 331-00, *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 121.97 ft²	**Width (inches)**	**Height (inches)**
Overall size	179	98-1/8

5.2 Frame Construction: All frame members were formed from extruded anodized aluminum with double poured thermal breaks. All frame corners (45XVA jamb and 45XVA vertical mullions with 45 XVE filler assembly to 45XHE head, 45 XHC intermediate horizontal, and 45XVA sill on left side of unit as well as 45XVA jamb and 45XVA vertical mullions with 45XVE filler assembly to 45XVA head, 45XHA intermediate horizontal, and 45XHB sill on right side of unit, all viewed from interior) were coped, butted, and mechanically assembled using two 45AFS8 #14 x 1" hex head screws at each corner. Dow 795 sealant was applied at each frame corner. The 45XVA vertical mullions were snapped onto the 45XVE filler assembly. A 45XFAPVC filler was snapped onto the channel of each 45XVA jamb. 4" wide 45XVL aluminum head anchor plates were located at the 45XVA head of the frame (right side) on the sides of each 45XVA jamb and 45XVA vertical mullion. 4" wide 45XHL aluminum head anchor plates were located at the 45XVB head of the frame (left side) on the sides of each 45XVA jamb and 45XVA vertical mullion. The 45XFA PVC filler was snapped into the top of the frame filling the remaining voids in the channel between the 45XVL aluminum head anchor plates. A 45AFP2 PVC water diverter was sealed to each end of the 45XHA and 45XHC intermediate horizontal members with Dow 795.

5.0 Test Specimen Description: (Continued)

5.2 Frame Construction: (Continued)

Frame Member	Material	Description
All members	Anodized aluminum with double poured thermal break	Extruded

	Joinery Type	Detail
All corners	Coped and butted	Mechanically fastened

Aluminum / Steel Extrusion Parts Details

Description	Part #	Overall Cross Section	Material Temp-Alloy
Vertical mullion	45XVA	2.000" x 4.500" x 0.080"	6063-T6 Aluminum
Jamb	45XVA	2.000" x 4.500" x 0.080"	6063-T6 Aluminum
Filler assembly	45XVE	0.611" x 4.000" x 0.070"	6063-T6 Aluminum/Fiberglass Reinforced Polyamide
Head	45XVA	2.000" x 4.500" x 0.080"	6063-T6 Aluminum
Head	45XVB	2.000" x 4.480" x 0.070"	6063-T6 Aluminum
Sill	45XVA	2.000" x 4.500" x 0.080"	6063-T6 Aluminum
Sill	45XVB	2.000" x 4.480" x 0.070"	6063-T6 Aluminum
Intermediate horizontal	45XCA	2.000" x 4.480" x 0.070"	6063-T6 Aluminum
Intermediate horizontal	45XHF	2.000" x 4.480" x 0.070"	6063-T6 Aluminum
Sill receptor	45XHF	2.500" x 4.734" x 0.078"	6063-T6 Aluminum
Glass stop	45XHD	1.476" x 1.552" x 0.055"	6063-T5 Aluminum
Glass stop	45XHE	1.491" x 1.552" x 0.055"	6063-T5 Aluminum
Head anchor	45XVL	0.745" x 4.000" x 0.078"	6063-T6 Aluminum
End dam	45AFP46	0.625" x 3.093" x 0.062"	6063-T5 Aluminum
Head anchor	45XHL	0.380" x 4.000" x 0.078"	6063-T6 Aluminum

Vinyl Extrusion Parts Details:

Description	Part #	Overall Cross Section	Material
PVC filler	45XFA	0.365" x 4.000" x 0.070"	PVC Plastic
Water diverter	45AFP2	1.187" x 1.187" x 0.060"	PVC Plastic
Setting block	45A3220	0.656" x 1.125" x 4.125"	EPDM 85 Durometer
Setting block	CW-552	1.250" x 0.188" x 4.000"	EPDM 85 Durometer
Setting block	45A3278	0.593" x 1.375" x 4.125"	EPDM 85 Durometer

Gasket	45A1133	0.500" x 0.545"	EPDM 60 Durometer

5.0 Test Specimen Description: (Continued)

5.3 Weatherstripping: No weatherstripping was utilized.

5.4 Glazing: Viewing from the interior, the left side of the unit was interior glazed and the right side was exterior glazed. The whole unit was dry glazed using 45A1133 gasket. The left side of the unit had 45XHE aluminum snap in glass stops at the interior. The 45XHE glass stops were located at the bottom of the 45XHB head and 45XHC intermediate horizontal. The right side of the unit had 45XHB aluminum snap in glass stops at the exterior. The 45XHD glass stops were located at the top of the 45XHA intermediate horizontal and 45XHB sill.

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1" IG	1/2" Aluminum reinforced	1/4" clear tempered	1/4" clear tempered	View from the interior, the left side was interior glazed and the right side was exterior glazed.

Location	Quantity	Daylight Opening	Glass Bite
All lites	8	42-1/4" x 45-13/16"	7/16"

5.5 Drainage:

Drainage Method	Size	Quantity	Location
Weep hole	5/16"	4	Exterior face of 45XHF sill receptor. One centered under each set of stacked lites.

5.6 Hardware: No hardware was utilized.

5.7 Reinforcement: No reinforcement was utilized.

6.0 Installation:

The specimen was installed into a LVL wood buck A 45AFP46 aluminum end dam was sealed to the ends of the 45XHF sill receptor with Dow 795. The 45XVA/45XVB sill was placed inside the 45XHF sill receptor. The two were sealed together full length at the interior and exterior with Dow 795. The rough opening allowed for a 3/8" shim space at the jambs and a 1/2" shim space at the head. The 45XVA/45XVB head and 45XVA jambs were sealed to the buck at the interior and exterior. The 45XHF sill receptor was sealed to the buck at the exterior. Dow 795 was used everywhere except for the 45XVA/45XVB head where GE Momentive SSG4600 UltraGlaze was used.

Location	Anchor Description	Anchor Location
45XVA/45XVB head and 45XHF sill receptor	5/16" x 4" lag screws and 1/4" x 4" lag screws	The 45XHF sill receptor was attached to the buck with 5/16" x 4" lag screws located at 5" from the ends and 3" from each side of 45XVA vertical mullions. Dow 795 sealant was placed over lag screw heads. The 45XVA/45XVB head was secured to the buck with 1/4" x 4" lag screws. Screws were located at 1" and 3" from sides of 45XVA jambs and 45XVA vertical mullions.

Test Results: The temperature during testing was 68°F. The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Air Leakage, per ASTM E 283 at 6.24 psf	0.01 cfm/ft²	0.06 cfm/ft² max.	
Water Penetration, per ASTM E 331 at 10.00 psf	Pass	No leakage	
Uniform Load Deflection, per ASTM E 330 taken at left vertical mullion (exterior view)			
+40.10 psf	0.42"	0.54" max.	
-40.10 psf	0.44"	0.54" max.	1, 2
Uniform Load Deflection, per ASTM E 330 taken at intermediate horizontal to left of center vertical mullion (exterior view)			
+40.10 psf	0.04"	0.23" max.	
-40.10 psf	0.03"	0.23" max.	1, 2
Uniform Load Deflection, per ASTM E 330 taken at intermediate horizontal to right of center vertical mullion (exterior view)			
+40.10 psf	0.02"	0.23" max.	
-40.10 psf	0.04"	0.23" max.	1, 2
Uniform Load Deflection, per ASTM E 330 taken at right vertical mullion (exterior view)			
+40.10 psf	0.48"	0.54" max.	
-40.10 psf	0.48"	0.54" max.	1, 2

Test Results: (Continued)

Title of Test	Results	Allowed	Note
Uniform Load Structural, per ASTM E 330 taken at left vertical mullion (exterior view)			
+60.15 psf	0.01"	0.19" max.	
-60.15 psf	0.01"	0.19" max.	1, 2
Uniform Load Structural, per ASTM E 330 taken at intermediate horizontal to left of center vertical mullion (exterior view)			
+60.15 psf	<0.01"	0.08" max.	
-60.15 psf	<0.01"	0.08" max.	1, 2
Uniform Load Structural, per ASTM E 330 taken at intermediate horizontal to right of center vertical mullion (exterior view)			
+60.15 psf	<0.01"	0.08" max.	
-60.15 psf	0.01"	0.08" max.	1, 2
Uniform Load Structural, per ASTM E 330 taken at right vertical mullion (exterior view)			
+60.15 psf	<0.01"	0.19" max.	
-60.15 psf	0.02"	0.19" max.	1, 2

7.0 Test Results: (Continued)

General Note: All testing was performed in accordance with the referenced standard(s).

Note 1: Loads were held for 10 seconds.

Note 2: Tape and film were not used to seal against air leakage during structural testing.

This report is reissued in the name of C. R. Laurence Co., Inc. through written authorization by Oldcastle BuildingEnvelope® to whom the original report was rendered. The original Oldcastle BuildingEnvelope® Report No. is B3630.01-801-44.

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen can be made. 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 Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

Digitally Signed by: Jeffrey Crump

Jeffrey Crump
Sr. Project Manager

Digitally Signed by: John H. Waskow

John Waskow, P.E.
Operations Manager

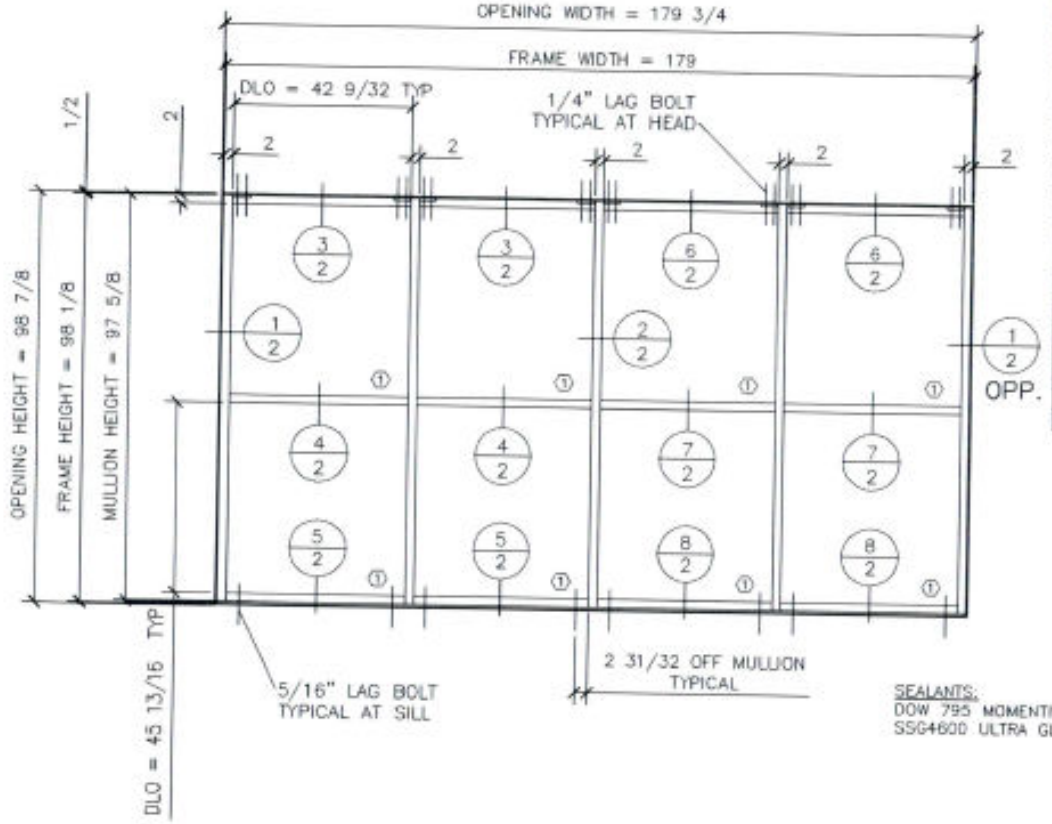
TK:cm

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Drawings (20)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	11/04/11	All	Original report issue
1	05/09/16	Appendix A	Added drawings to reissue report
2	05/17/16	All	Changed series/model numbers throughout report

Appendix A
Drawings



SEALANTS:
DOW 795 MOMENTIVE
SSG4600 ULTRA GLAZE

BILL OF MATERIAL

QTY	PART NO.	DESCRIPTION	LENGTH		NOTES
		EXTRUSIONS			
5	45XVA	Vertical/Jamb	97 5/8"	.	.
3	45XVE	Intermediate Vertical Filler	97 5/8"	.	.
4	45XVA	Head Horizontal	42 1/4"	.	.
2	45XHA	Intermediate Horizontal	42 1/4"	.	.
4	45XHC	Sill Horizontal	42 1/4"	.	.
1	45XHF	Sill Receptor	179 1/4"	.	.
2	45XHC	Intermediate Horizontal	42 1/4"	.	.
4	45XHD	Glass Stop	42 3/16"	.	Stock
4	45XHE	Glass Stop	42 3/16"	.	Stock
2	45XFA	Jamb Perimeter Filler	97 5/8"	.	Stock
4	45XFA	Head Perimeter Filler	34"	.	Stock
		ACCESSORIES			
4	45XVL	QS Glazed Head Anchor	4"	.	.
4	45XHL	QS Glazed Head Anchor	4"	.	.
16		1/4" X 4" HH Lag Screw	.	.	.
8	45AFP2	Water Diverter	.	.	Stock
8	45A3220	Setting Block	.	.	Stock
4	CW-552	Setting Block	.	.	Stock
4	45A3278	Setting Block	.	.	Stock
48	45AFS8	#14 x 1" Spline Screw	.	.	Stock
8		5/16" x 4" HH Lag Screw	.	.	.
2	45AFP46	End Cap	.	.	Stock
32	45A1133	Horizontal Gasket	43 1/2"	.	Stock
32	45A1133	Vertical Gasket	47 1/4"	.	Stock

TEST REQUIREMENTS

AIR INFILTRATION:
<.06 CFM/SQ.FT. @ 6.24 PSF

WATER PENETRTION:
10 PSF

STRUCTURAL DEFLECTION:
40 PSF (L/175)

STRUCTURAL OVERLOAD:
60 PSF (0.2% permanent set)

TESTING ORDER:
Static Air
Static Water
Structural Deflection
Structural Overload

GLAZING CHART

SYM	QTY	DESCRIPTION
①	8	43 1/8" X 46 11/16", 1" CLEAR TEMP (1/4-1/2-1/4)

REVISIONS

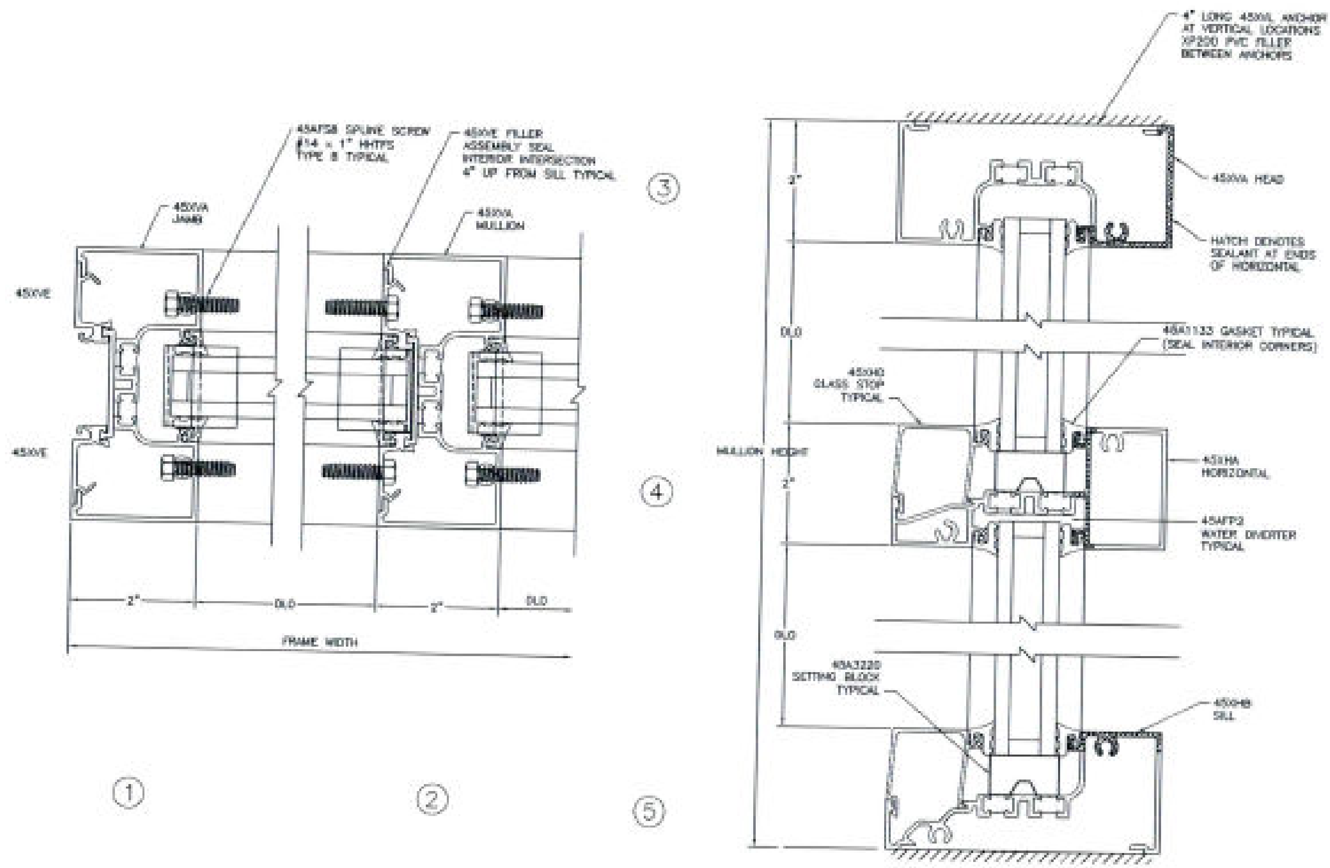
C.R.LAURENCE CO.
ARCHITECTURAL PRODUCTS
2000 E. 38TH Street, Los Angeles, CA 90058
www.crlaurence.com

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 1 OF 2



REVISIONS

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SHT 2 OF 2