Architectural Testing

TEST REPORT

Report No.: C9426.01-301-44

Rendered to:
ALL WEATHER ARCHITECTURAL ALUMINUM
Vacaville, California

PRODUCT TYPE: Thermally Broken Aluminum Combination
Double Fixed Over Double Awning Window

SERIES/MODEL: 5000 Series

SPECIFICATION: AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*
AND
AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights.*

Title	Summary of Results
Primary Product Designators, AAMA/WDMA/CSA 101/I.S.2/A440-08	Class C – PG35: Size Tested 2426 x 1625 (96 x 64) – Type AP AND Class LC – PG50: Size Tested 2426 x 1625 (96 x 64) – Type AP
Primary Product Designator, AAMA/WDMA/CSA 101/I.S.2/A440-05	AP – C50 2426 x 1625 (96 x 64)
Air Infiltration	0.04 L/s/m² (0.01 cfm/ft²)
Water Leakage Test Pressure	360 Pa (7.52 psf)
Design Pressure	±2400 Pa (±50.13 psf)

Test Completion Date: 06/21/2013

Reference must be made to Report No. C9426.01-301-44, dated 01/17/14 for complete test specimen description and detailed test results.

1.0 Report Issued To: All Weather Architectural Aluminum
777 Aldridge Road
Vacaville, California 95688

2.0 Test Laboratory: Architectural Testing, Inc.
2524 East Jensen Avenue
Fresno, California 93706
559-233-8705

3.0 Project Summary:

3.1 Product Type: Combination Double Fixed Over Double Awning Window

3.2 Series/Model: 5000 Series

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods. The specimen tested successfully met the performance requirements for multiple ratings.

For AAMA/WDMA/CSA 101/I.S.2/A440-08:
Class C – PG35: Size Tested 2426 x 1625 (96 x 64) – Type AP
Class LC – PG50: Size Tested 2426 x 1625 (96 x 64) – Type AP

For AAMA/WDMA/CSA 101/I.S.2/A440-05:
AP – C50 2426 x 1625 (96 x 64)

3.4 Test Dates: 06/18/2013 – 06/21/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until June 21, 2017.

3.6 Test Location: Architectural Testing, Inc. test facility in Fresno, California.

3.7 Test Sample Source: The test specimen was provided by the client.

3.8 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 B. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

Name	Company
Seamus Porter	All Weather Architectural Aluminum
Jeff Osugi	Architectural Testing, Inc.
Jarod Hardman	Architectural Testing, Inc.
David Douglass	Architectural Testing, Inc.

4.0 Test Specifications:

AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 3.94 m^2 (42.4 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	2426	95-1/2	1625	64
Awning Panels (2)	1188	46-3/4	803	31-5/8

5.2 Frame Construction:

Frame Member	Material	Description
Head and Sill	Aluminum	Extruded aluminum with poured and debridged thermal break.
Jambs	Aluminum	Extruded aluminum with poured and debridged thermal break.
Mullions	Aluminum	Extruded aluminum with poured and debridged thermal break; horizontal mullions integrated fixed lite and active panel; vertical mullion utilized 2-piece construction.

5.0 Test Specimen Description: (Continued)

5.2 Frame Construction: (Continued)

	Joinery Type	Detail
Frame corners	Mitered	Joints were sealed with seam sealer and joined with welds exterior of the thermal break.
Vertical mullion halves	Slip-fit	Slip-fit vertical mullion halves were fastened together with #8 square drive flat head screws cut flush with the opposite exposed surface at 1-3/4" long, and spaced 4" to 8" from each end and each mullion joint.
Horizontal mullions	Coped	Mullion ends were coped and tabs were staked through slots at each jamb and welded through slots at each vertical mullion; sealed with seam sealer.
Vertical mullion	Coped	Mullion ends were coped and tabs were staked through slots at the head and sill; sealed with seam sealer.

5.3 Panel Construction:

Panel/Member	Material	Description
Rails and stiles	Aluminum	Extruded aluminum with poured and debridged thermal break

	Joinery Type	Detail
All Panel Corners	Miter	Joined with aluminum corner keys crimped in place; sealed with seam sealer.

5.4 Weatherstripping:

Description	Quantity	Location
Hollow bulb vinyl	1 row	Interior face of panel.
Hollow bulb vinyl	1 row	Exterior face of frame and mullions.

5.0 Test Specimen Description: (Continued)

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1" IG	Aluminum	1/8" clear annealed	1/8" clear annealed	Glazing was set from the exterior onto 3/8" wide double-sided foam tape sealed at the corners with silicone; secured using a snap-fit glazing bead with a rubber gasket against the glass.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Active panels	2	1075 x 690	42-5/16 x 27-3/16	5/8"
Fixed lites	2	1135 x 747	44-11/16 x 29-7/16	5/8"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weep notch	11/16" x 1/8"	4	Exterior glazing track of horizontal mullion at fixed lites, 1" from each corner.
Weep notch	5/8" x 1/8"	4	Exterior glazing track leg of bottom rails, 1-3/8" from each corner.
Weep notch	5/8" x 1/8"	4	Exterior sill leg, 3/4" from each jamb and each vertical mullion.
Weep notch	7/16" x 1/8"	1	Exterior sill leg, midspan at the vertical mullion.

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Locking handle assembly	4	Each jamb and vertical mullion, spaced 4" from the sill, each secured with two 10-24 x 5/16" Phillips pan head screws.
Roto-operator assembly	2	Midspan of each panel; sealed and attached to sill using four 10-24 x 5/8" Phillips flat head screws; and attached to bottom rails with four #10 x 7/16" square-drive pan head self-drilling screws.
Multi arm hinge assembly	4	Attached using five #10 x 7/16"square-drive pan head self-drilling screws on each stile and four #10 x 5/8"square-drive pan head self-drilling screws on each vertical mullion and jamb.

5.8 Reinforcement: No reinforcement was utilized.

5.9 Screen Construction: No screen was utilized.

6.0 Installation:

The specimen was installed into a Douglas fir buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the window was sealed with silicone.

Location	Anchor Description	Anchor Location
Nail fin	1/4" x 2" Phillips flat head screw	2-1/4" from each corner and spaced 11" – 16" on center.

7.0 Test Results: The temperature during testing was 19°C (66°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 9 N (2.0 lbf) Maintain motion: 21 N (4.7 lbf) Locks: 31 N (7.0 lbf)	70 N (15.7 lbf) max. 45 N (10.1 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.18 L/s/m² (0.04 cfm/ft²)	1.5 L/s/m² (0.3 cfm/ft²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	2
Uniform Load Deflection, per ASTM E 330	N/A	N/A	2
Uniform Load Structural, per ASTM E 330	N/A	N/A	2
Forced Entry Resistance, per ASTM F 588, Type B, Grade 10 and per CAWM-301, Type II	Pass	No entry	
Awning, Hopper, Projected Hardware Load Test 140 N (31.5 lbf)	0.5 mm (0.02")	36.5 mm (1.44") max.	

7.0 Test Results: (Continued)

Optional Performance			
Title of Test	**Results**	**Allowed**	**Note**
Water Penetration, per ASTM E 547 at 360 Pa (7.52 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E 330			
Bottom rail			
+1680 Pa (+35.09 psf)	1.2 mm (0.05")	6.8 mm (0.27")	
-1680 Pa (-35.09 psf)	4.4 mm (0.18")	6.8 mm (0.27")	
Vertical mullion			
+1680 Pa (+35.09 psf)	7.7 mm (0.30")	9.1 mm (0.36")	
-1680 Pa (-35.09 psf)	7.2 mm (0.28")	9.1 mm (0.36")	4, 5, 6
Uniform Load Structural, per ASTM E 330			
Bottom Rail			
+2520 Pa (+52.63 psf)	0.0 mm (0.00")	3.6 mm (0.14") max	
-2520 Pa (-52.63 psf)	0.2 mm (0.01")	3.6 mm (0.14") max	
Vertical mullion			
+2520 Pa (+52.63 psf)	0.3 mm (0.01")	4.8 mm (0.19") max	
-2520 Pa (-52.63 psf)	0.0 mm (0.00")	4.8 mm (0.19") max	4, 5

7.0 Test Results: (Continued)

Optional Performance (Continued)			
Title of Test	**Results**	**Allowed**	**Note**
Uniform Load Deflection, per ASTM E 330			
Bottom Rail			
+2520 Pa (+52.63 psf)	1.2 mm (0.04")		
-2520 Pa (-52.63 psf)	1.2 mm (0.04")		
Vertical mullion			
+2520 Pa (+52.63 psf)	11.6 mm (0.45")		
-2520 Pa (-52.63 psf)	11.0 mm (0.43")	N/A	4, 5, 6
Uniform Load Structural, per ASTM E 330			
Bottom Rail			
+3600 Pa (+75.19 psf)	0.1 mm (0.01")	3.6 mm (0.14") max	
-3600 Pa (-75.19 psf)	0.1 mm (0.01")	3.6 mm (0.14") max	
Vertical mullion			
+3600 Pa (+75.19 psf)	0.5 mm (0.02")	4.8 mm (0.19") max	
-3600 Pa (-75.19 psf)	0.5 mm (0.02")	4.8 mm (0.19") max	4, 5, 7

Note 1: *The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

Note 2: *The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.*

Note 3: *Without insect screen.*

Note 4: *Loads were held for 10 seconds.*

Note 5: *Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.*

Note 6: *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. This deflection data is reported for special code compliance and information only.*

Note 7: *When different allowable limits are specified for multiple product designations or specifications, the limits reported are the more restrictive.*

Architectural Testing 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 Architectural Testing, Inc. for the entire test record retention period.

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(s) 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: David Douglass

David Douglass
Project Manager

Digitally Signed by:Leaton Kirk

Leaton Kirk
Director – Regional Operations

DD: ms

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Alteration Addendum (1)
Appendix-B: Drawings (8)