



TEST REPORT

Report No.: C9424.01-301-44

Rendered to:

ALL WEATHER ARCHITECTURAL ALUMINUM
Vacaville, California

SERIES/MODEL: 5000 Series

PRODUCT TYPE: Thermally Broken Aluminum XOOX Casement Combination Window

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 Designator, AAMA/WDMA/CSA 101/I.S.2/A440-08	Class C – PG50: Size Tested 3251 x 1510 (128 x 60) – Type C
Primary Product Designator, AAMA/WDMA/CSA 101/I.S.2/A440-05	C – C50 3251 x 1510 (128 x 60)
Design Pressure	±2400 Pa (±50.13 psf)
Air Infiltration	<0.1 L/s/m ² (<0.01 cfm/ft ²)
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

Test Completion Date: 06/21/2013

Reference must be made to Report No. C9424.01-301-44 dated 01/21/14 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 Series/Model: 5000 Series

3.2 Product Type: Thermally Broken Aluminum
XOXX Casement Combination Window

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 an AAMA/WDMA/CSA 101/I.S.2/A440-08 rating of **Class C – PG50: Size Tested 3251 x 1510 (128 x 60) – Type C**, and an AAMA/WDMA/CSA 101/I.S.2/A440-05 rating of **C – C50 3251 x 1510 (128 x 60)**.

3.4 Test Dates: 06/17/2013 – 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:

<u>Name</u>	<u>Company</u>
Seamus Porter	All Weather Architectural Aluminum
Jay Ratliff	Architectural Testing, Inc.
Jeff Osugi	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: 4.92 m ² (52.9 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	3251	128	1510	59-7/16
Panels (3)	807	31-3/4	1499	59

5.2 Frame Construction:

Frame Member	Material	Description
Head, Sill, and Jamb	Aluminum	Extruded aluminum with poured and debridged thermal break.
Mullions	Aluminum	Extruded aluminum with poured and debridged thermal break.

	Joinery Type	Detail
Frame corners	Mitered	Corners were welded; sealed with seam sealer.
Vertical Mullion joints	Coped	Mullion ends were coped and staked at tabs through slots in head and sill; sealed with seam sealer.

5.3 Panel Construction:

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.

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
Hollow bulb vinyl	1 row	Active panel stiles and rails.
Hollow bulb vinyl	1 row	Frame at panel opening perimeter.

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	
Panels	3	695 x 1386	27-3/8 x 54-9/16	5/8"
Fixed	1	752 x 1441	29-5/8 x 56-3/4	5/8"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weep Notch	7/16" x 1/8"	2	Sill exterior leg at fixed lite, 7/8" from each corner.
Weep Notch	7/16" x 1/8"	6	Sill exterior leg at vent openings, 7/8" from each corner.
Weep Notch	7/16" x 1/8"	6	Bottom rail exterior glazing track leg, 7/8" from each corner.
Weatherstripping	1" Gap	6	Bottom rail, 1" from each corner.
Weatherstripping	1/4" Gap	6	Stiles, 1" from each top corner.



5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Locking handle assembly	6	14" from each end of lock stiles; each attached with two #10-24 x 5/8" Phillips flat head screws.
Strike plate	6	Opposite locks; each attached to vertical lock mullion with two #10-24 x 5/16" Phillips flat head screws.
Multi-arm hinge assembly	6	Attached using five #10 x 7/16" square-drive self-drilling pan head screws in the top and bottom rails, and four #10 x 5/8" square-drive self-drilling pan head screws in the frame.

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	1-1/2" from each corner and spaced 8-1/2" - 13" on center.



7.0 Test Results: The temperature during testing was 21°C (69°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068 <u>Initiate motion</u> <u>Maintain motion</u> <u>Locks</u>	85 N (19.0 lbf) 46 N (10.3 lbf) 20 N (4.5 lbf)	Report Only 100 N (22.5 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	<0.1 L/s/m ² (<0.01 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type B, Grade 10 and per CAWM-301, Type II	Pass	No entry	
Sash Vertical Deflection Test 270 N (60.7 lbf)	<0.1 mm (<0.01")	16.1 mm (0.64") max.	
Distributed Load Test 300 psf (6.27 psf)	No damage	No damage	
Optional Performance			
Water Penetration, per ASTM E 547 at 360 Pa (7.52 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 <u>Hinge Stile</u> -2520 Pa (-52.63 psf) +2520 Pa (+52.63 psf) <u>Lock-to-Fixed Mullion</u> -2520 Pa (-52.63 psf) +2520 Pa (+52.63 psf) <u>Fixed-to-Hinge Mullion</u> -2520 Pa (-52.63 psf) +2520 Pa (+52.63 psf) <u>Lock-to-Lock Mullion</u> -2520 Pa (-52.63 psf) +2520 Pa (+52.63 psf)	2.9 mm (0.12") 1.1 mm (0.05") 7.4 mm (0.29") 5.0 mm (0.20") 5.1 mm (0.20") 5.0 mm (0.20") 7.4 mm (0.29") 3.9 mm (0.16")	8.6 mm (0.34") 8.6 mm (0.34") 8.4 mm (0.33") 8.4 mm (0.33") 8.4 mm (0.33") 8.4 mm (0.33") 8.4 mm (0.33") 8.4 mm (0.33")	4, 5, 6

**7.0 Test Results:** (Continued)

Title of Test	Results	Allowed	Note
Optional Performance (Continued)			
Uniform Load Structural, per ASTM E 330			
<u>Hinge Style</u>			
-3600 Pa (-75.19 psf)	0.1 mm (0.01")	4.5 mm (0.18")	
+3600 Pa (+75.19 psf)	0.0 mm (0.00")	4.5 mm (0.18")	
<u>Lock-to-Fixed Mullion</u>			
-3600 Pa (-75.19 psf)	0.0 mm (0.00")	4.4 mm (0.17")	
+3600 Pa (+75.19 psf)	0.3 mm (0.01")	4.4 mm (0.17")	
<u>Fixed-to-Hinge Mullion</u>			
-3600 Pa (-75.19 psf)	0.3 mm (0.01")	4.4 mm (0.17")	
+3600 Pa (+75.19 psf)	0.0 mm (0.00")	4.4 mm (0.17")	
<u>Lock-to-Lock Mullion</u>			
-3600 Pa (-75.19 psf)	0.6 mm (0.03")	4.4 mm (0.17")	
+3600 Pa (+75.19 psf)	0.0 mm (0.00")	4.4 mm (0.17")	5, 6

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: Without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 4: The allowable limits reported are the more restrictive according to either AAMA/WDMA/CSA 101/I.S.2/A440-05 or AAMA/WDMA/CSA 101/I.S.2/A440-08, for the respective product designations given. The data reported may also be used for special code compliance and informational purposes.


Note 5: Loads were held for 10 seconds.

Note 6: 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.

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 (7)