Architectural Testing

TEST REPORT

Report No.: C9427.01-301-44

Rendered to:

ALL WEATHER ARCHITECTURAL ALUMINUM
Vacaville, California

SERIES/MODEL: 5000 Series
PRODUCT TYPE: Thermally Broken Aluminum
Combination Fixed & Casement Window OO/XO/OO

SPECIFICATIONS: 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 LC – PG50: Size Tested 1613 x 3353 (64 x 132) – Type C
Primary Product Designator, AAMA/WDMA/CSA 101/I.S.2/A440-05	C – C50 1613 x 3353 (64 x 132)
Design Pressure	±2400 Pa (±50.13 psf)
Air Infiltration	<0.01 L/s/m^2 (<0.01 cfm/ft^2)
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

Test Completion Date: 07/03/2013

Reference must be made to Report No. C9427.01-301-44, 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: Thermally Broken Aluminum Combination Fixed & Casement Window OO/XO/OO

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 an AAMA/WDMA/CSA 101/I.S.2/A440-08 rating of **Class LC – PG50: Size Tested 1613 x 3353 (64 x 132) – Type C**, and an AAMA/WDMA/CSA 101/I.S.2/A440-05 rating of **C – C50 1613 x 3353 (64 x 132)**.

3.4 Test Dates: 04/18/2013 – 07/26/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until July 26, 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
Jay Ratliff	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: 5.41 m^2 (58.23 ft.)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	1613	63-1/2	3353	132
Active Panel	797	31-3/8	1520	59-13/16

5.2 Frame Construction:

Frame Member	**Material**	**Description**
Head, Sill, and Jambs	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	Joints were welded and sealed with seam sealer.
Horizontal Mullion joints	Coped	Mullion ends were coped and tabs were staked through slots at each jamb; sealed with seam sealer.
Vertical Mullion Joints	Coped	Vertical mullions were coped and welded to each horizontal mullion, coped and tabs staked through slots at head and sill; sealed with seam sealer.

5.0 Test Specimen Description: (Continued)

5.3 Panel Construction:

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

	Joinery Type	Detail
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	Frame at casement 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 with silicone at each corner; secured using a snap-fit glazing bead with a rubber gasket against the glass.

Lite	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Top & bottom fixed lites	4	741 x 850	29-3/16 x 57-5/8	5/8"
Middle active panel	1	674 x 1400	26-9/16 x 55-1/8	5/8"
Middle fixed	1	741 x 1463	29-3/16 x 57-5/8	5/8"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weep Notch	7/16" x 1/8"	10	Sill and horizontal mullions, 2 notches per lite at 7/8" from each corner.
Weep Notch	7/16" x 1/8"	2	Bottom rail, at 7/8" from each corner.
Weatherstripping	1" gap	2	Bottom rail, at 1" from each corner.
Weatherstripping	1/4" gap	2	Hinge and lock stiles, at 1" from each top corner.

5.7 Hardware:

Description	Quantity	Location
3-Point lock assembly	1	Vertical mullion, sliding lock bar attached with 6 #10-24 x 5/16" Phillips flat head screws, handle attached with 2 #10-24 x 5/8" Phillips flat head screws.
Keepers	3	Lock stile, 7-1/2" from the top and 22-1/4" on center, each attached with 3 #10-24 x 5/16" Phillips flat head screws.
Roto-operator	1	Attached to bottom rail with 2 #10 x 5/16" square drive pan head self-drilling screws and the horizontal mullion with 4 #10-24 x 5/8" Phillips flat head screws.
Butt hinges	3	Mid-span and 5-1/4" from corners, attached with 3 #10-32 x 3/8" socket pan head screws through the stile and 3 #10-32 x 1/2" socket pan head screws through the frame.
Friction stay-bar	1	Attached to horizontal mullion and top rail with two #10 x 5/16" square drive pan head self-drilling screws in each member.

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

7.0 Test Results: The temperature during testing was 18°C (64°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 15 N (3.4 lbf) Maintain motion: 4 N (1.0 lbf) Locks: 40 N (9.0 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)	<0.01 L/s/m² (<0.01 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 Pass	No entry	
Sash Vertical Deflection 270 N (60.7 lbf)	1.0 mm (0.04")	15.9 mm (0.62") max.	
Distributed Load 300 Pa (6.27 psf)	Pass	No damage	

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			
taken at bottom rail			
+2520 Pa (+52.63 psf)	0.3 mm (0.01")		
-2520 Pa (-52.63 psf)	0.3 mm (0.01")		
taken at horizontal mullion			
+2520 Pa (+52.63 psf)	14.6 mm (0.57")		
-2520 Pa (-52.63 psf)	15.2 mm (0.60")	N/A	4, 5, 6
Uniform Load Structural, per ASTM E 330			
taken at bottom rail			
+3600 Pa (+75.19 psf)	0.5 mm (0.02")	2.4 mm (0.09") max.	
-3600 Pa (-75.19 psf)	0.3 mm (0.01")	2.4 mm (0.09") max.	
taken at horizontal mullion			
+3600 Pa (+75.19 psf)	2.7 mm (0.11")	4.7 mm (0.19") max.	
-3600 Pa (-75.19 psf)	2.3 mm (0.09")	4.7 mm (0.19") max.	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: *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: *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for the product designations shown. Deflection data are reported for special code compliance and information only.*

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)