

TEST REPORT

Report No.: C5897.01-301-44

Rendered to:

International Window
Fullerton, California

PRODUCT TYPE: 7223

SERIES/MODEL: Aluminum Casement

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

CAWM 301-90, *Forced Entry Resistance Test for Windows.*

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
Primary Product Designator	C-C55 900 x 1816 (35 x 72)	C-C60 900 x 1505 (35 x 59)
Design Pressure	±2640 Pa (±55.14 psf)	±2880 Pa (±60.15 psf)
Air Infiltration	0.25 L/s/m ² (0.05 cfm/ft ²)	
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)	

Test Completion Date: 02/25/2013

Reference must be made to Report No. C5897.01-301-44, dated 03/19/13 for complete test specimen description and detailed test results

1.0 Report Issued To: International Window
1551 E. Orangethrope Ave.
Fullerton, California 92831

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: 7223

3.2 Series/Model: Aluminum Casement

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods. The specimens tested successfully met the performance requirements for the following ratings: Test Specimen #1: **C-C55 900 x 1816 (35 x 72)**; Test Specimen #2: **C-C60 900 x 1505 (35 x 59)**.

3.4 Test Dates: 01/31/2013 – 02/25/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until March 19, 2017.

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

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

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimens 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>
Richard Johnson	International Window
Jay Ratliff	Architectural Testing, Inc.
David Douglass	Architectural Testing, Inc.

4.0 Test Specifications:

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

CAWM 301-90, *Forced Entry Resistance Test for Windows.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Test Specimen #1:

Overall Area: 1.63 m ² (17.59 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	900	35-7/16	1816	71-1/2
Vent	865	34-1/16	1777	69-15/16

Test Specimen #2:

Overall Area: 1.35 m ² (14.58 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	900	35-7/16	1505	59-1/4
Vent	861	33-7/8	1471	57-15/16

The following descriptions apply to all specimens unless noted.

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill and jambs	Aluminum	Thermally broken poured and debridged 0.320".

	Joinery Type	Detail
All corners	Mitered	The corners were secured with two #8 x 1" Phillips pan head self-drilling screws and sealed.

5.3 Vent Construction:

Vent Member	Material	Description
Top rail, bottom rail and each stile	Aluminum	Thermally broken poured and debridged 0.225".

5.0 Test Specimen Description: (Continued)

5.3 Vent Construction: (Continued)

	Joinery Type	Detail
All corners	Mitered	Secured with two corner keys and two #6 x 1" Phillips pan head screws and sealed.

5.4 Weatherstripping:

Description	Quantity	Location
Wrapped foam gasket	1 Row	All members of vent. All members of frame. The corners were sealed.
Dual leaf gasket	1 Row	Each glazing bead.

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" Annealed	1/8" Annealed	Interior glazed onto a 3/8" wide x 1/16" high glazing tape with a bead of silicone glazing sealant and secured with an extruded aluminum snap in glazing bead.

Test Specimen #1:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Vent	1	748 x 1661	29-7/16 x 65-3/8	3/8 - 1/2"

Test Specimen #2:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Vent	1	743 x 1353	29-1/4 x 53-1/4	3/8 - 1/2"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weephole	1-3/4" x 1/4" Oval (1-1/4" x 3/16" effective)	2	2-1/2" for specimen #1 and 3" for specimen #2 from each end through exterior sill face.
Weepnotch	1-3/4" wide x 1/8" high	2	2-5/8" from each end for specimen #1 and 2-1/4" for specimen #2 through each leg of sill.
Weephole	3/4" x 5/16" oval	4	5-1/2" from each end through bottom rail of vent. 3-7/8" from each end through glazing track on bottom rail of vent.

5.7 Hardware:

Description	Quantity	Location
Multi arm hinge	2	Head and sill secured to the frame with three #8 x 1" and vent with five #8 x 3/4" Phillips pan head self-drilling screws for specimen #1. Secured to the frame with three #8 x 3/4" and vent with five #8 x 3/4" Phillips pan head self-drilling screws for specimen #2. The screws were sealed.
Lock	2	16" from each end for specimen #1 and 14-1/2" from each end for specimen #2 on lock stile of vent secured with two 10-24 x 5/8" Phillips flat head screws through spacers and sealed with a gasket. The screws were sealed.
Keeper	2	Opposite each lock and secured with two 10-24 x 5/16" Phillips flat head screws. The screws were sealed.

5.8 Reinforcement: No reinforcement was utilized.

5.9 Screen Construction: No screen was utilized.

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the window was sealed with silicone. The frame was blocked with 2 x 2 wood.

Location	Anchor Description	Anchor Location
Head, sill and jambs	3" drywall screws	6" from each corn and 12 - 16" on center through 2 x 2 and mounting fin.

7.0 Test Results: The temperature during testing was 23 - 24°C (73 - 75°F). The results are tabulated as follows:

Test Specimen #1:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 117 N (26.3 lbf) Maintain motion: 107 N (24.0 lbf) Locks: 18 N (4.0 lbf)	Report Only 135 N (30.3 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.25 L/s/m ² (0.05 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	2
Uniform Load Deflection, per ASTM E 330 taken at right stile of vent +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	1.3 mm (0.05") 2.0 mm (0.08")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at right stile of vent +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	0.0 mm (0.00") 0.3 mm (0.01")	5.3 mm (0.21") max.	4, 5
Forced Entry Resistance, per ASTM F 588, Type: B - Grade: 20	Pass	No entry	

7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Forced Entry Resistance, per CAWM 301, Type: II	Pass	No entry	
Sash Vertical Deflection 270 N (60.7 lbf)	1.8 mm (0.07")	17.3 mm (0.68") max.	
Distributed Load 300 Pa (6.27 psf)	Pass	No damage	
Optional Performance			
Water Penetration, per ASTM E 547 at 580 Pa (12.11 psf)	Pass	No leakage	
Uniform Load Deflection, per ASTM E 330 taken at right stile of vent +2640 Pa (+55.14 psf) -2640 Pa (-55.14 psf)	1.5 mm (0.06") 5.3 mm (0.21")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at right stile of vent +3960 Pa (+82.71 psf) -3960 Pa (-82.71 psf)	0.3 mm (0.01") 0.5 mm (0.02")	5.3 mm (0.21") max.	4, 5

Test Specimen #2:

Title of Test	Results	Allowed	Note
Uniform Load Deflection, per ASTM E 330 taken at right stile of vent +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	0.5 mm (0.02") 1.3 mm (0.05")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at right stile of vent +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	0.0 mm (0.00") 0.0 mm (0.00")	4.4 mm (0.17") max.	4, 5

7.0 Test Results: (Continued)

Test Specimen #2: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Uniform Load Deflection, per ASTM E 330 taken at right stile of vent +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	1.0 mm (0.04") 2.8 mm (0.11")	Report Only.	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at right stile of vent +4320 Pa (+90.23 psf) -4320 Pa (-90.23 psf)	0.0 mm (0.00") 0.0 mm (0.00")	4.4 mm (0.17") max.	4, 5

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

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.



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.

David Douglass
Project Manager

Leaton Kirk
Director – Regional Operations

JO: ms

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (6) Complete drawings packet on file with Architectural Testing, Inc.



Appendix A

Alteration Addendum

- Alteration #1:** Date – 01/31/13
Cause for alteration – Specimen #1 Failed water penetration resistance test.
Remedial action taken – Re-sealed gasket miter.
- Alteration #2:** Date – 02/04/13
Cause for alteration - Specimen #1 Failed structural load test.
Remedial action taken – Replaced hinge screws.



Architectural Testing

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Record Retention End Date: 03/19/17

Appendix B

Drawings

***Note:** Complete drawings packet on file with Architectural Testing, Inc.*