



**MIAMI-DADE COUNTY
PERFORMANCE TEST REPORT**

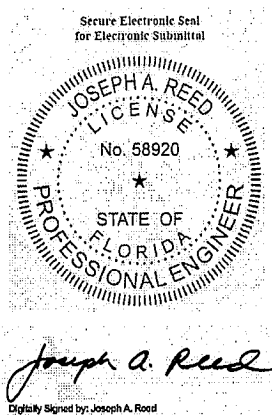
Rendered to:

EAGLE WINDOW & DOOR, INC.

**SERIES/MODEL: 5080 Series 00 Clad Casement Fixed
PRODUCT TYPE: Aluminum Clad Fixed Window**

This report contains in its entirety:

**Cover Page: 1 page
Report Body: 12 pages
Alteration Addendum: 1 page
Sketches: 1 page
Drawings: 21 pages**



Date: 2009.03.26 10:42:36 -04'00'

Report No.: 87735.01-602-18

Test Dates: 02/23/09

Through: 02/25/09

Report Date: 03/26/09

Expiration Date: 02/25/19

Miami-Dade County Notification No.: ATIWI 07031

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Architectural Testing

MIAMI-DADE COUNTY PERFORMANCE TEST REPORT

Rendered to:

EAGLE WINDOW & DOOR, INC.
2045 Kerper Boulevard, P.O. Box 1072
Dubuque, Iowa 52004-1072

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Project Summary: Architectural Testing, Inc. was contracted by Eagle Window & Door, Inc. to perform testing per Florida Building Code, Test Protocols for High Velocity Hurricane Zone, Protocols TAS 201-94, TAS 202-94 and TAS 203-94 on three Series/Model 5080 Series 00 Clad Casement Fixed, aluminum clad fixed windows. The samples tested met the performance requirements set forth in the protocols for a +70.18 psf and -80.20 psf *Design Pressure* rating. Test specimen description and results are reported herein. The samples were provided by the client.

Test Procedures: The test specimens were evaluated in accordance with the following:

TAS 201-94, *Impact Test Procedures.*

TAS 202-94, *Criteria for Testing Impact and Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure Loading.*

TAS 203-94, *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.*

Drawing Reference: The test specimen drawings have been reviewed and verified by Architectural Testing, Inc. and are representative of the samples tested.

Test Specimen Description:

Series/Model: 5080 Series 00 Clad Casement Fixed

Product Type: Aluminum Clad Fixed Window

Overall Size: 5' 0" wide by 8' 0" high

Fixed Daylight Opening: 4' 6" wide by 7' 5-3/4" high

Finish: Interior wood was natural and the exterior was extruded aluminum cladding.

Test Specimen Description:

Glazing Details: The sash utilized nominal 14.3 mm (0.562") thick laminated glass. The laminated glass was fabricated from two sheets of nominal 5.7 mm (0.224") thick annealed glass by Cardinal separated by a 2.29 mm (0.090") SentryGlas® Plus interlayer. The glass was set from the interior against 0.094" thick by 0.266" wide butyl tape sealant by PTI Inc. Novaflex M111 silicone sealant by Novagard was employed between the glass edges and frame. Neoprene glass shims were employed at the glazing pocket perimeter. Interior wood stops employed 0.032" thick by 0.625" wide foam tape and was secured with 1-1/4" wire brads spaced 4" to 9" on center. The glazing bite was 12.7 mm (0.500").

Weatherstripping: No weatherstripping was utilized.

Frame Construction: The wood frame members consisted of laminated veneer lumber. The frame corners were of rabbet joint construction and secured with two 1/2" crown by 1-3/4" long staples per corner. Each wood frame corner employed a 1/2" wide by 1" long corrugated fastener at each interior corner. A wood fixed rail and stile were employed at the interior and set onto a bed of silicone sealant. Extruded aluminum cladding at the exterior was mitered at the corners, slipped onto the wood frame members, corner keyed and secured with two #8 x 7/16" screw and one #10 x 2-1/2" screw per corner. A wood secondary stop was employed at the interior and secured with a continuous concealed fastener spline.

Hardware: No hardware was utilized.

Drainage: No drainage was utilized.

Installation: The specimen was installed into a nominal 2x4 Spruce-Pine-Fir surround which was then installed into a nominal 2x10 Spruce-Pine-Fir surround. The unit was set onto a continuous bed of silicone sealant and secured to the wood buck with masonry clips that were spaced 18" to 24" on center. The clips were secured to the frame with four #7 x 5/8" screws per clip. The clips were secured to the wood buck with four #8 x 1-1/2" screws per clip. Silicone sealant was also applied over the screw heads. The unit had a rough opening of 63-1/2" wide by 90-1/2" tall.

Test Results: The following results have been recorded:

Protocol TAS 202-94, Static Air Pressure Tests

Test Unit #1

Design Pressure: +70.18 psf and -80.20 psf

Title of Test	Results		
Air Infiltration			
1.57 psf (25 mph)	<0.01 cfm/ft ²		
6.24 psf (50 mph)	<0.01 cfm/ft ²		
	Indicator Readings (inch)		
	#1	#2	#3
Structural Loads			
50% of Test Pressure (+52.63 psf)			
Maximum Deflection	0.11	0.11	0.09
Permanent Set	0.02	0.02	0.03
Design Pressure (+70.18 psf)			
Maximum Deflection	0.16	0.16	0.13
Permanent Set	0.04	0.04	0.04
50% of Test Pressure (-60.15 psf)			
Maximum Deflection	0.19	0.20	0.15
Permanent Set	0.05	0.06	0.04
Design Pressure (-80.20 psf)			
Maximum Deflection	0.27	0.28	0.22
Permanent Set	0.09	0.08	0.06
Water Infiltration			
15% Positive Design Pressure (+10.65 psf)	No Penetration		
Test Pressure (+105.26 psf)			
Maximum Deflection	0.15	0.18	0.11
Permanent Set	0.02	0.03	0.02
Test Pressure (-120.30 psf)			
Maximum Deflection	Failure: Glass broke		
Permanent Set			
Forced Entry - ASTM F 588-97	Not tested due to failure of glass		

Note: See Architectural Testing Sketch #1 for indicator locations.

Test Results: (Continued)

Protocol TAS 202-94, Static Air Pressure Tests

Test Unit #1R

Design Pressure: +70.18 psf and -80.20 psf

Title of Test	Results		
Air Infiltration			
1.57 psf (25 mph)	<0.01 cfm/ft ²		
6.24 psf (50 mph)	<0.01 cfm/ft ²		
	Indicator Readings (inch)		
	#1	#2	#3
Structural Loads			
50% of Test Pressure (+52.63 psf)			
Maximum Deflection	0.10	0.12	0.09
Permanent Set	0.01	0.01	0.01
Design Pressure (+70.18 psf)			
Maximum Deflection	0.14	0.13	0.11
Permanent Set	0.02	0.01	0.02
50% of Test Pressure (-60.15 psf)			
Maximum Deflection	0.18	0.18	0.15
Permanent Set	0.06	0.06	0.05
Design Pressure (-80.20 psf)			
Maximum Deflection	0.29	0.31	0.24
Permanent Set	0.12	0.12	0.09
Water Infiltration			
15% Positive Design Pressure (+10.65 psf)	No Penetration		
Test Pressure (+105.26 psf)			
Maximum Deflection	0.29	0.27	0.22
Permanent Set	0.07	0.07	0.06
Test Pressure (-120.30 psf)			
Maximum Deflection	0.63	0.62	0.50
Permanent Set	0.19	0.17	0.15
Forced Entry - ASTM F 588-97	Pass		

Note: See Architectural Testing Sketch #1 for indicator locations.

Test Results: (Continued)

Protocol TAS 201-94, *Impact Test Procedures*

Missile Weight: 9.25 lbs
Muzzle Distance from Test Specimen: 17 ft.

Test Unit #1

Impact #1: Missile Velocity: 50.0 fps

Impact Area: Center of glass
Observations: 1-1/4" long by 1/16" wide tear

Results: Pass

Impact #2: Missile Velocity: 49.8 fps

Impact Area: Upper right corner of glass
Observations: 5" section deglazed

Results: Fail

Test Unit #1R

Impact #1: Missile Velocity: 50.0 fps

Impact Area: Center of glass
Observations: 1-1/2" long by 3/16" wide tear

Results: Pass

Impact #2: Missile Velocity: 49.5 fps

Impact Area: Upper right corner of glass
Observations: No holes or tears

Results: Pass

Test Results: (Continued)

Protocol TAS 201-94, *Impact Test Procedures* (Continued)

Test Unit #2

Impact #1: Missile Velocity: 49.8 fps

Impact Area: Upper right corner of glass

Observations: No holes or tears

Results: Pass

Impact #2: Missile Velocity: 49.3 fps

Impact Area: Center of glass

Observations: 1-1/8" long by 1/16" wide tear in glass

Results: Pass

Test Unit #3

Impact #1: Missile Velocity: 49.3 fps

Impact Area: Lower left corner of glass

Observations: No holes or tears

Results: Pass

Impact #2: Missile Velocity: 49.8 fps

Impact Area: Center of glass

Observations: 1-1/4" long by 1/16" wide tear in glazing

Results: Pass

Note: Refer to Architectural Testing Sketch #1 for impact locations.

Test Results: (Continued)

Protocol TAS 203-94, *Cyclic Wind Pressure Loading*

Test Unit #1R

Design Pressure: +70.18 psf and -80.20 psf

POSITIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator (inch)		
			#1	#2	#3
14.04 to 35.09	3500	1.94	0.12	0.13	0.10
0 to 42.11	300	2.82	0.15	0.17	0.13
35.09 to 56.14	600	2.29	0.16	0.17	0.14
21.05 to 70.18	100	2.70	0.19	0.21	0.16
			Permanent Set (inch)		
			0.06	0.06	0.05

NEGATIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator (inch)		
			#1	#2	#3
24.06 to 80.20	50	2.95	0.29	0.35	0.31
40.10 to 64.16	1050	2.20	0.26	0.31	0.28
0 to 48.12	50	2.98	0.23	0.27	0.24
16.04 to 40.10	3350	2.89	0.19	0.24	0.20
			Permanent Set (inch)		
			0.10	0.12	0.09

Result: Pass

Test Results: (Continued)

Protocol TAS 203-94, *Cyclic Wind Pressure Loading*

Test Unit #2

Design Pressure: +70.18 psf and -80.20 psf

POSITIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator (inch)		
			#1	#2	#3
14.04 to 35.09	3500	2.29	0.10	0.10	0.09
0 to 42.11	300	2.90	0.10	0.14	0.13
35.09 to 56.14	600	2.03	0.18	0.18	0.18
21.05 to 70.18	100	2.97	0.24	0.23	0.21
			Permanent Set (inch)		
			0.09	0.08	0.07

NEGATIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator (inch)		
			#1	#2	#3
24.06 to 80.20	50	2.98	0.28	0.27	0.24
40.10 to 64.14	1050	2.90	0.26	0.25	0.22
0 to 48.12	50	2.89	0.25	0.24	0.21
16.04 to 40.10	3350	1.95	0.23	0.21	0.18
			Permanent Set (inch)		
			0.12	0.11	0.08

Result: Pass

Test Results: (Continued)

Protocol TAS 203-94, *Cyclic Wind Pressure Loading*

Test Unit #3

Design Pressure: +70.18 psf and -80.20 psf

POSITIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator (inch)		
			#1	#2	#3
14.04 to 35.09	3500	2.29	0.13	0.13	0.10
0 to 42.11	300	2.90	0.23	0.18	0.16
35.09 to 56.14	600	2.03	0.28	0.22	0.19
21.05 to 70.18	100	2.97	0.34	0.28	0.24
			Permanent Set (inch)		
			0.17	0.10	0.11

NEGATIVE PRESSURE

Pressure Range (psf)	Number of Cycles	Average Cycle Time (seconds)	Maximum Deflection at Indicator (inch)		
			#1	#2	#3
24.06 to 80.20	50	2.98	0.48	0.41	0.27
40.10 to 64.16	1050	2.90	0.41	0.35	0.24
0 to 48.12	50	2.89	0.41	0.34	0.23
16.04 to 40.10	3350	1.95	0.34	0.29	0.20
			Permanent Set (inch)		
			0.13	0.10	0.08

Result: Pass

Note: Refer to Architectural Testing Sketch #1 for indicator locations.

Test Equipment:

Cannon: Steel pipe barrel utilizing compressed air to propel the missile

Missile: 2x4 Southern Pine

Timing Device: Electronic Beam Type

Cycling Mechanism: Computer controlled centrifugal blower with electronic pressure measuring device

Deflection Measuring Device: Linear transducers

Laboratory Compliance Statements: The following are provided as required by the protocols for the testing reported herein.

Upon completion of testing, specimens tested for TAS 201-94 met the requirements of Section 1626 of the Florida Building Code.

Upon completion of testing, specimens tested for TAS 202-94 met the requirements of Section 1620 of the Florida Building Code.

Upon completion of testing, specimens tested for TAS 203-94 met the requirements of Section 1626 of the Florida Building Code.

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

Testing was conducted at the Architectural Testing, Inc. laboratory located in Schofield, Wisconsin.

List of Official Observers:

<u>Name</u>	<u>Company</u>
Chad Cornell	Eagle Window & Door, Inc.
Mike Blum	Eagle Window & Door, Inc.
Dave Schumann	Architectural Testing, Inc.
Joseph A. Reed, P.E.	Architectural Testing, Inc.
Jeff Zibton	Architectural Testing, Inc.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of ten years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.


Results obtained are tested values and were secured by using the designated test methods. 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 specimens 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 M. Zibton

Jeffrey M. Zibton
Senior Technician



Digitally Signed by: Joseph A. Reed

Joseph A. Reed, P.E.
Director - Engineering and Product Testing

WLM:hlc/cmd

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

- Appendix-A: Alteration Addendum (1)
- Appendix-B: Sketches (1)
- Appendix-C: Drawings (21)