

**TESTED FOR**

**FLEETWOOD ALUMINUM PRODUCTS, INC.**

2485 Railroad Street  
Corona, CA 91720

Report No. : A03V-139  
Date : December 15, 2003  
Page : 1 of 5

**1.0 PURPOSE**

The purpose of this report is to present the testing methods employed and the test results obtained during the performance testing of one (1) **Aluminum Single Hung Window** described in paragraph 4.0 of this report.

**2.0 TEST REFERENCES**

**2.1** Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.  
AAMA/NWWDA 101/I.S.2-97: **H – C40** 54 x 90

**2.2** CAWM 301 - 90 Forced Entry Resistance Tests for Windows.

**3.0 SUMMARY**

The test results in paragraphs 5.0 and 6.0 indicate that the test sample described in paragraph 4.0 of this report complied with the performance requirements of the above referenced specifications.

**4.0 SAMPLE SUBMITTED**

**SERIES:** WESTWOOD 250

**CONFIGURATION:** O/X

**FRAME SIZE:** 54.00" x 90.00"

**SASH SIZE:** 51.50" x 44.81"

**FIXED SIZE:** 51.50" x 45.00"

**GLASS:** Each of the panels was glazed with a single lite of 3/16" clear annealed glass.

**GLAZING:** Each glass lite was channel glazed with vinyl gasket onto a single glaze aluminum reducer which in-turn was wrapped with dual glazed aluminum stiles and rails.

**WEEPAGE:** The L-shaped sill rested on a sub-sill which contained the following weeps:

- 1) Sub-sill – on the exterior face contained a 1" x 3/16" weep slot at each end.
- 2) Window sill – contained four (4) 1" x 3/16" weep slots allowing water to drain down into sub-sill. The weeps slots were equally spaced throughout the sill span.

**WEATHERING:**

The frame contained the following:

- 1) The frame head interior retaining leg contained a full length strip of 0.140" overall polypile facing out.
- 2) Each jamb center leg contained a single full length strip of 1½ finger vinyl seal facing out and a strip of 0.190" overall polypile with a center fin facing in.

The operable panel contained the following:

- 1) The interlock contained a full length strip of 0.140" overall polypile facing out.
- 2) Each stile contained a 0.250" foam filled Q-lon bulb seal facing in.
- 3) The bottom rail contained a full length strip of bulb vinyl seal. The bulb seal slipped into the weatherstrip groove of the bottom rail and the backing of the bulb seal was cut to allow the seal to run full length of the panel width.

The fixed panel contained the following:

- 1) The top rail contained a full length strip of 0.230" overall polypile with a 0.250" center fin facing in.
- 2) The interlock contained a strip of 0.230" overall polypile facing in. The interlock also contained a 1" strip of 0.320 polypile bunny tail applied at each end of the stiles.

**HARDWARE:**

The operable panel was supported in the frame with a block and tackle balance in each jamb.

The top end of the active vent stiles contained a pre-stressed stainless steel balance clip fastened with a pair of #6 x 3/8" Ph Flat Head screws.

The operable interlock contained a metal tongue latch lock in a PVC housing placed 13" from each end. Each latch housing was fastened with a pair of #10 x 3/4" Ph Flat Head screws. When closed and locked, the tongue of the lock engaged its respective metal keeper fastened to the fixed interlock with a pair of screws.

The bottom end of the vent stiles, facing each jamb contained a rigid PVC balance shoe. The balance shoes were each fastened with the corner assembly screw.

The vent stiles at each end of the weatherstrip groove contained a rigid PVC glide pad.

**CONSTRUCTION:**

The frame corners were joined with a pair of #8 x 3/4" Ph Pan Head screws.

The standard sill sat on the sub-sill, was sealed full length from the interior and exterior running joints and was mechanically joined with five (5) #8 x 3/4" Ph Pan Head screws equally spaced throughout the sill span on the innermost horizontal leg.

The panels each contained an aluminum glazing reducer which was wrapped with dual glazed stiles and rails. Once assembled the panel corners were each joined with one (1) #8 screw.

Once the fixed panel was set into the frame, the panel was supported in the frame with a 3" long steel pin which was fastened at each end of the fixed interlock with a #6 screw. The pins engaged a notch punched in the frame jambs.

Each stile of the fixed panel was secured to the frame jamb from the interior with a #8 x 3/4" Ph Pan Head screw applied 1" down from the top rail.

A 2½" long 1" x 1" x 1/8" thick aluminum angle was fastened to the midspan of the frame sill with a pair of #8 x 1/2" Ph Pan Head screws. The clip served as a stop for the vent bottom rail.

**CAULKING:**

The following were sealed:

- 1) All frame corner joints full profile.
- 2) The frame sill to the sub-sill full length on the interior and exterior.
- 3) The ends of the sub sill were caulked shut.
- 4) All vinyl glazing corners prior to assembly.
- 5) The aluminum glazing reducers were sealed to the dual glaze stiles and rails full length prior to assembly.
- 6) All sill anchor screws.

**ANCHORING:**

The sub-sill was mounted into 2" x 6" wood rough opening and fastened with #8 x 1½" Ph Flat Head screws every 16" on center. The window frame sill was then secured to the sub-sill with five (5) #8 x ¾" Ph Pan Head screws and through the head and jambs with #8 x 1½" Ph Flat Head screws every 16" on center.

**5.0 TEST PROCEDURES AND RESULTS**

5.1 All testing procedures were performed in accordance with the performance requirements of the test specifications referenced in paragraph 2.0 of this report.

**5.2 TEST RESULTS**  
**PARAGRAPH**

<b><u>PARAGRAPH</u></b>	<b><u>TEST DESCRIPTION</u></b>	<b><u>MEASURED</u></b>	<b><u>ALLOWED</u></b>
2.2.1.6.1	Operating Force (ASTM E 2068) Motion	33 lbf.	45 lbf.
2.1.2	Air Infiltration (ASTM E 283) 1.57 PSF The tested specimen exceeds the performance requirements specified in AAMA/NWWDA 101/LS.2-97 for Air Infiltration.	0.28 CFM/Ft²	0.3 CFM/Ft²
2.1.3	Water Penetration (ASTM E 547) 4.50 PSF With/without screen	No Leakage	No Leakage
2.1.4	Uniform Load Structural (ASTM E 330) 45.0 PSF POS 45.0 PSF NEG	0.01" 0.02"	0.21" Set 0.21" Set
2.2.1.6.2	Deglazing (ASTM E 987) 70 lbf. Rails 50 lbf. Stiles	11% 7%	Less than 100% Less than 100%

**5.3 OPTIONAL PERFORMANCE GRADES**

**TEST RESULTS**  
**PARAGRAPH**

<b><u>PARAGRAPH</u></b>	<b><u>TEST DESCRIPTION</u></b>	<b><u>MEASURED</u></b>	<b><u>ALLOWED</u></b>
4.3	Water Penetration (ASTM E 547 & ASTM E 331) 6.00 PSF With/without screen	No Leakage	No Leakage

**5.3 OPTIONAL PERFORMANCE GRADES (cont'd)**

**TEST RESULTS**

<b><u>PARAGRAPH</u></b>	<b><u>TEST DESCRIPTION</u></b>	<b><u>MEASURED</u></b>	<b><u>ALLOWED</u></b>
4.4.1	Uniform Load Deflection (ASTM E 330)		
	40.0 PSF POS	0.77"	No Damage
	40.0 PSF NEG	0.89"	No Damage
4.4.2	Uniform Load Structural (ASTM E 330)		
	60.0 PSF POS	0.05"	0.21" Set
	60.0 PSF NEG	0.07"	0.21" Set

**6.0 2.1.8 CAWM 301 - 90 FORCED ENTRY RESISTANCE TEST RESULTS**

2.4.1 Type "I" Window

	<b><u>TEST</u></b>	<b><u>RESULTS</u></b>	<b><u>DESCRIPTION</u></b>
5.1.1		Passed	Disassembly
5.1.2	<b>A</b>	Passed	With sliding sash in normal position, apply a concentrated load of 200 pounds from the exterior (when possible), to each member incorporating a locking device, at a point on the sash member within 6 inches of the locking device, in direction parallel to the plane of the glass that tends to open the window.
5.1.3	<b>B</b>	Passed	Repeat Test A while simultaneously applying a concentrated load of 75 pounds to the sash member containing the locking device, within 6 inches of the locking device in direction perpendicular to the plane of the glass toward the interior.
5.1.4	<b>C</b>	Passed	Repeat Test A while simultaneously applying a concentrated load of 75 pounds to the sash member containing the locking device, within 6 inches of the locking device in direction perpendicular to the plane of the glass toward the exterior.
5.1.5	<b>E</b>	Passed	Hand and Tool Manipulation
5.1.6.1	<b>D</b>	Passed	With sliding sash toward the frame jamb to the full limit within the confines of the window frame, repeat Test B, while simultaneously applying a concentrated load of 25 pounds inward at the corner of the operating sash near the interlock stile.
5.1.7	<b>E</b>	Passed	Hand and Tool Manipulation

For a complete description of the tested sample refer to the attached cross section drawings.

Assembly and die drawings of frame members are on file and have been compared to the sample submitted. Test sample sections, drawings and a copy of this report will be retained at the test laboratory for four years.

This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory.

The above test results were obtained by using the applicable ASTM and CAWM Test Methods. This report does not constitute Certification of this product. Certification can only be granted by an approved Administrator and/or Validator.

Testing Completed: December 15, 2003

Report Completed: December 16, 2003

---

Pete Cruz  
Test Engineer

---

Melchor Ordaz  
Test Technician