TESTED FOR

FLEETWOOD ALUMINUM PRODUCTS, INC.
2485 Railroad Street
Corona, CA 91720

Report No. : A04H-009
Date : February 10, 2004

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 Horizontal Sliding 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 101/1.S.2 - 97: **HS - C40** 72 x 60 (With sub sill)

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: **OX**

FRAME SIZE: 72.00" x 60.00"

SASH SIZE: 36.50" x 56.62"

FIXED SIZE: 36.50" x 56.62"

GLASS: Each of the panels was glazed with a 5/8" overall insulated glass unit which contained a lite of 3/16" clear annealed glass and a 1/4" metal spacer.

GLAZING: The panels were each channel glazed with vinyl gasket.

WEEPAGE: The frame sub-sill exterior face contained a 1" x 3/16" weep slot 6" from each end.

The frame sill contained five (5) 1" x 1/4" weeps slots punched in the operable channel allowing water to drain into frame sub-sill.
The weeps were punched under the operable panel and were equally spaced throughout the panel span.

WEATHERING: The frame contained the following:

1) The frame head and sill center leg each contained a single full length strip of 1½ finger vinyl seal facing out and a strip of 0.230" overall polypile with a 0.250" center fin facing in.
2) The underside of the sill center leg contained a full length strip of 0.500" overall polypile with a center fin.
3) Each jamb interior retaining leg contained a full length strip of 0.140" overall polypile facing out.

The operable panel contained the following:

1) The top and bottom rail each contained a full length strip of 0.250" foam filled Q-lon bulb seal.
2) The interlock and the lead stiles each contained a strip of 0.230" overall polypile with a 0.250" center fin facing out. The stiles also contained a 1" strip of 0.320 polypile bunny tail applied at each end of the stiles.

The fixed panel contained the following:

1) The lead stile 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 with a 0.250" center fin facing in. The interlock also contained a 1" strip of 0.320 polypile bunny tail applied at each end of the stiles.

HARDWARE: At each end, the operable panel bottom rail contained a nylon roller with a metal axle in a PVC housing.

The operable interlock contained one (1) metal tongue latch lock in a PVC housing placed 17" up from the bottom rail of vent; the lock was fastened with a pair of screws. When closed and locked, the tongue of the lock engaged its own metal keeper fastened to the fixed interlock with two (2) screws.

CONSTRUCTION: All of the frame corners were mechanically joined with a pair of #6 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 1" Ph Pan Head screws equally spaced throughout the sill span on the innermost horizontal leg.

The panel lead stile to rail corners were each mechanically joined with a #8 x 3/4" Ph Pan Head screw. The interlock stile to rail corners was joined with a #8 x 2" Ph Flat Head screw.

A rigid extruded PVC anti-lift / air barrier block was fastened to the top end notch of the fixed interlock with a #6 x 1/2" Ph Pan Head screw.

The top and bottom rail of the fixed panel was secured to the frame from the interior with a #8 x 3/4" Ph Pan Head screw applied 1" in from the lead stile.

The head, in the operable portion of the frame contained a 3½" PVC snap-in anti-lift placed 1" in from the fixed interlock.

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 glazing corners prior to assembly.
5) The fixed interlock to sill grove joint was fully sealed.
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 1" 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	TEST DESCRIPTION	MEASURED	ALLOWED
2.2.2.5.1	Operating Force (ASTM E 2068)		
	Motion	6.5 lbf.	25 lbf.
2.1.2	Air Infiltration (ASTM E 283)		
	1.57 PSF	0.10 CFM/Ft²	0.3 CFM/Ft²
	The tested specimen exceeds the performance requirements specified in AAMA/NWWDA 101/I.S.2-97 for Air Infiltration.		
2.1.3	Water Penetration (ASTM E 547)		
	4.50 PSF	No Leakage	No Leakage
	With/without screen		
2.1.4	Uniform Load Structural (ASTM E 330)		
	45.0 PSF POS	0.01"	0.23" Set
	45.0 PSF NEG	0.01"	0.23" Set
2.2.2.5.2	Deglazing (ASTM E 987)		
	70 lbf. Stiles	5%	Less than 100%
	50 lbf. Rails	2%	Less than 100%

5.3 OPTIONAL PERFORMANCE GRADES

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

5.3 OPTIONAL PERFORMANCE GRADES (cont'd)

TEST RESULTS PARAGRAPH	TEST DESCRIPTION	MEASURED	ALLOWED
4.4.1	Uniform Load Deflection (ASTM E 330)		
	40.0 PSF POS	0.78"	No Damage
	40.0 PSF NEG	0.89"	No Damage
4.4.2	Uniform Load Structural (ASTM E 330)		
	60.0 PSF POS	0.03"	0.23" Set
	60.0 PSF NEG	0.04"	0.23" Set

5.4 ADDITIONAL TESTING

TEST DESCRIPTION	MEASURED	ALLOWED
Water Penetration (ASTM E 547 & ASTM E 331)		
8.00 PSF	No Leakage	No Leakage

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

2.4.1 Type "I" Window

	TEST	RESULTS	DESCRIPTION
5.1.1		Passed	Disassembly
5.1.2	**A**	Passed	Apply a concentrated load of 200 pounds in direction parallel to the plane of the glass which tends to open the window.
5.1.3	**B**	Passed	Repeat Test A while simultaneously applying a concentrated load of 75 pounds in direction perpendicular to the plane of the glass toward the interior.
5.1.4	**C**	Passed	Repeat Test A while simultaneously applying a concentrated load of 75 pounds in direction perpendicular to the plane of the glass toward the exterior.
5.1.5	**E**	Passed	Hand and Tool Manipulation
5.1.6.1	**D**	Passed	With sliding sash lifted upward to the full limit within the confines of the window frame, Repeat Test B while simultaneously applying concentrated load of 25 pounds inward at the corner of the operating sash near the interlock stile.
5.1.7	**E**	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. An approved Administrator and/or Validator can only grant certification.

Testing Completed: February 9, 2004
Report Completed: February 10, 2004

Pete Cruz	Melchor Ordaz
Test Engineer	Test Technician