FENESTRATION
TESTING
LABORATORY

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TESTED FOR

Fleetwood Aluminum
2485 Railroad Street
Corona, CA 91720

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) **Thermally Broken Aluminum Hopper, Projected & Fixed Combination 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:

P - HC 40	63 x 135	Fixed/Projected Out/Fixed/Hopper
P - HC 75	63 x 101	Fixed/Projected Out/Fixed

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:	**YUKON 5000 - T OG**
CONFIGURATION:	Fixed - Projected Out - Fixed - Hopper
FRAME SIZE:	62.50" x 134.50"
HOPPER SASH SIZE:	60.63" x 32.38"
PROJECTED SASH SIZE:	60.63" x 34.44"
FIXED SIZE:	58.63" x 30.00" (lower lite) daylight opening 58.63" x 29.75" (top lite) daylight opening
GLASS:	All glass consisted of a single lite of 1/4" annealed.
GLAZING:	All lites, vent and fixed, were outside glazed with bulb vinyl gasket on the inside and on the outside aluminum snap-in glazing stop was applied full perimeter. The glazing stop also contained a strip of bulb vinyl. The glass was set on a rubber setting block at each end and was adhered to the frame with silicone applied 2 inches from each glazing corner under the bulb vinyl.

WEEPAGE: The hopper sill and the fixed lite sill immediately above the hopper contained a 1" x 3/16" weep slot with a PVC awning cover at each end on the outside face. The hopper weeps contained an open cell foam in the sill.

The projected out sill mullion contained a 1" x 3/16" weep slot at each end. The fixed window above the projected window contained a 1/4" diameter vertical weep hole at each end of the intermediate sill mullion.

WEATHERING: Both vents contained a strip of bulb vinyl full perimeter as did the frame opening for each vent. The self-mulling frame head of the hopper that was stacked to the combination unit above contained two (2) strips of bulb vinyl.

HARDWARE: The four (4) bar hinges for both the hopper and projected out vent were Cotswold HD 22 and were fastened to the frame with four (4) #10 x 1/2" PPH screws and to the vent with three (3) #10 x 1/2" PPH screws.

The project out vent contained a white bronze cam lock 11¼ inches from each end of the bottom rail and fastened with a pair of #10 x 3/8" PFH screws. The hopper vent top rail contained a white bronze cam lock 9.38 inches from each end and fastened with a pair of #10 x 3/8" PFH screws. The locks for both vents engages their respective white bronze strike or keeper fastened to their respective intermediate mullion.

CONSTRUCTION: The frame and vent corners were keyed and welded. The key was an aluminum angle extrusion measuring 1.44" x .25" and 2.75" long.

The hopper self-mulling head extrusion was stacked under the fixed/projected out/fixed unit and was also fastened together with three (3) #10 x 1½" PPH screws. The intermediate mullions of the projected out/fixed combination were butted and welded to the frame jambs at each end.

CAULKING: All of the frame and vent corners were sealed full perimeter. Where the bulb vinyl on the combination fixed/projected out/fixed meet at the corners, seam sealant was applied. All lock and keep screws were sealed. From the inside, all glazing corners were sealed. The frame was sealed full perimeter to the 2" x 6" wooden buck on the inside and outside.

ANCHORING: The frame was fastened to a 2" x 6" wooden buck with screws every 12 inches.

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
2.1.2	Air Infiltration (ASTM E 283) 6.24 PSF	0.02 CFM/Ft^2	0.3 CFM/Ft^2

The tested specimen exceeds the performance requirements specified in AAMA/NWWDA 101/I.S.2 for Air Infiltration.

5.2 **TEST RESULTS (cont'd)**

PARAGRAPH	TEST DESCRIPTION	MEASURED	ALLOWED
2.1.3	Water Penetration (ASTM E 547 & ASTM E 331)		
	6.00 PSF With/without screen	No Leakage	No Leakage
2.1.4	Uniform Load Structural (ASTM E 330)		
	60.0 PSF POS	+0.03"	+0.24" Set
	60.0 PSF NEG	- 0.03"	- 0.24" Set
2.2.4.5.3	Torsion Test	1.34"	1.77"
2.2.4.5.4	Horizontal Concentrated Load Test on Latch Rail		
	30 lbf.	0.04"	0.06"
2.2.4.5.5	Vertical Concentrated Load Test on Latch Rail		
	30 lbf.	0.05"	0.06"
2.2.4.5.6	Torsion Load Test on Intermediate Frame Rails		
	40 lbf. - in	0.03"	0.07"
2.2.4.5.7	Vertical Concentrated Load Test on Intermediate Frame Rails		
	30 lbf.	0.02"	0.06"
2.2.4.5.8	Balance Arm Load Test		
	60 lbf.	No Damage	No Damage

5.3 **OPTIONAL PERFORMANCE GRADES**

Fixed/Projected Out/Fixed Combination only

4.3	Water Penetration (ASTM E 547 & ASTM E 331)		
	15.0 PSF With/without screen	No Leakage	No Leakage
4.4.1	Uniform Load Structural (ASTM E 330)		
	112.5 PSF POS	+0.06" Set	0.24" Set
	112.5 PSF NEG	- 0.08" Set	0.24" Set

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

2.4.2 Type "II & III" Windows

	TEST	RESULTS	DESCRIPTION
5.2.1		Passed	Disassembly
5.2.2	**A**	Passed	With the swinging sash in normal position, simultaneous 100# within 3 inches of each end of member which is opposite the hinged side, in direction perpendicular to the plane of the glass that would tend to open the window.

6.0 2.1.8 **CAWM 301-90 FORCED ENTRY TEST RESULTS (cont'd)**

2.4.2 Type "II & III" Windows

	TEST	RESULTS	DESCRIPTION
5.2.3	**B**	Passed	Test A and simultaneous 100# on the outside within 1 inch of each end of the member which is opposite the hinged side, in direction parallel to plane of the glass which would tend to disengage the lock.
5.2.4	**C**	Passed	With the swinging sash in normal position, 200# on member containing locking device, within 6 inches of locking device, in direction perpendicular to the plane of the glass which would tend to open the window, while simultaneously 100# on the outside within 1 inch of each end of the member which is opposite the hinged side, in direction parallel to the plane of the glass which would tend to disengage the lock.
5.2.5	**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.

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/Validator.

Testing Completed: June 2, 1998
Report Completed: June 3, 1998

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