Fenestration Testing Laboratory, Inc.

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TESTED FOR
Fleetwood Windows and Doors
395 Smitty Way
Corona, CA 92879

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 sliding glass door** described in paragraph 4.0 of this report.

2.0 TEST REFERENCES

2.1 Standard Specification for Windows, Doors, and Skylights AAMA/WDMA/CSA 101 I.S.2/A440-05
SD-R30 3658 X 2438 (144 X 96)

2.2 CAWM 300 - 96 Forced Entry Resistance Tests for Sliding Glass Doors

3.0 SUMMARY

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

4.0 SAMPLE SUBMITTED

SERIES: Norwood 3000 Sliding Glass Door

CONFIGURATION: OOXX

FRAME SIZE: 3658 mm X 2438 mm (144.02" X 95.98")

FIXED PANEL (L1): Panel to far left - 833 mm X 2397 mm (32.79" X 94.37")

FIXED PANEL (L2): Second panel from left - 861 mm X 2397 mm (33.90" X 94.37")

ACTIVE PANEL (R1): Panel to far right 994 mm X 2388 mm (39.13" X 94.02")

ACTIVE PANEL (R2): Second panel from right 949 mm X 2388 mm (37.36" X 94.02")

GLASS: Each panel was glazed with 1.00" overall insulated glass unit containing 6 mm clear tempered glass on both sides and a 0.5" spacer.

SPACER: The spacers were A1-D type and 0.5" wide.

GLAZING: All panels were channel glazed with vinyl wrap around gasket.

WEEPAGE: The sill was sloped and gravity drained under and around the panels.

WEATHERING:

The frame contained 0.300" overall high poly pile with center fin as follows:

a) The frame inside leg – one strip full perimeter facing out.
b) The frame center leg between active and fixed channels –
One strip on the active jamb and one strip at the head facing in.
One strip on the fixed jamb and one strip at the head facing out.
c) The head fixed channel outer leg - one strip facing in.

The vertical mullion between the fixed panels contained a strip of 0.300 " high two finger vinyl on the center leg between the fixed and active channels facing out. This was the case for the channel mating with panel L1 and for the panel mating with panel L2.

The following contained a strip of 0.310" overall high poly pile:

a) The interlock stile on panel L2 facing in. At each end of this interlock was a 6" long rigid PVC air barrier which slipped onto a leg on the interlock. This rigid PVC air barrier contained a strip of 0.25" high foam filled bulb vinyl facing in.
b) The interlock stile on panel R2 facing out.

The female yoke fastened to the lock stile on panel R2 contained two strips of 0.230" overall high poly pile with center fin - one facing in and one facing out.

Each active panel bottom rail contained a strip of 0.70" high flap vinyl on the outside leg full length. Where the flap vinyl bridge a stile hollow, it was attached to an aluminum extrusion which was pressure fitted into the stile hollow.

HARDWARE:

Each active panel bottom rail contained an adjustable tandem steel roller at each end. Each roller was fastened to the abutting stile web with a pair of ¼" diameter x 0.5" long PPH screws.

Panel R2 lock stile contained a mortice lock set manufactured by Archetype. The lock was located 53" up from the bottom and was fastened to the stile with three allen drive machine screws supplied with the lock set. The screws went through a threaded hole in the lock housing and into a threaded steel lock nut plate on the glazing channel side of the stile. The lever which actuated the lock was fastened to the inside face of the stile with a single allen drive screw.

For forced entry only, a second lock was tested on panel R2. This lock was a Adams Rite Maxum Security Multi Slide 1853 with thumb turn. This lock was located 45" up from the bottom and was fastened with three PFH machine screws supplied with the lock set. The screws went through a threaded hole in the lock housing and into a threaded steel lock nut plate on the glazing channel side of the stile. PVC shims were inserted between the housing and stile web to achieve a snug fit.

Each of the locks described above engaged its respective strike on the male yoke fastened to panel R1's strike stile. The strike consisted of a slot in the yoke wall reinforced with two 0.09" thick steel plates; one plate on either side of the male yoke wall on the top end of the slot. The plates were fastened to the male yoke wall with a single #10 x 1.88" long PPH machine screw which also was threaded into a steel nut plate in the stile hollow.

Panel R1 also contained an Archetype lock on the lead stile. The lock was fastened in the same manner described above to the lead stile. The lock engaged a steel strike part of the lock set and fastened on the jamb extrusion with three machine screws.

CONSTRUCTION: The frame corners were mechanically joined with a pair of #10 X 0.75" PPH screws.

Each of the panel corners, fixed and active, was mechanically joined with a single #10 x 2" PPH screw.
Panel R2 contained an aluminum female yoke extrusion fastened to the lock stile with eight #8 x 0.75" PPH screws in line with the panel.

Panel R1 contained an aluminum make yoke extrusion fastened to the strike stile with ten #8 x 0.75" PPH screws.

The vertical mullion was fabricated at the ends to fit snuggly around the threshold and head extrusion legs. At the bottom, this mullion was fastened to the threshold with a 1.75" x 1.125" x 0.88" side aluminum 'L' clip. The clip was fastened to the mullion with a screw and nut and to the threshold with a #8 x 2" PFH screw.

Panel L1 was fastened to the fixed jamb and the mullion from the inside with three #8 x 0.75" screws located 3" from each end and at midspan.

Panel L2 was fastened to the mullion from the inside with three #8 x 0.75" screws located 3" from each end and at midspan. Panel L2 was also fastened to an aluminum block in the threshold with a single #8 x 2" PPH screw which passed through a hole in the interlock stile web. The aluminum block in turn was fastened to the threshold with a #8 x 0.75" screw.

CAULKING: The following were sealed:

1. The frame corners were sealed full profile.
2. The male to female yokes to their respective stiles full length.
3. All glazing corners were sealed on the exterior side.
4. The vertical mullion at top and bottom was sealed full profile to the frame.
5. All screws screw head anchoring the threshold to the rough opening.
6. Full length between the threshold and the rough opening.

ANCHORING: The frame was fastened to the 2" X 8" wooden rough opening with #8 X 2" PFH screws as follows: eight per jamb and ten at head and sill.

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
5.3.1.1	Operating Force (ASTM E 2068)		
	Breakaway Force	18 N (4.0 lbf)	135N (30 lbf)
	Operating Force	9 N (2.0 lbf.)	90 N (20 lbf)
5.3.1.1.3	Latching Device (Archetype lock)		
	Open and Close Latch Device	13 N (2.9 lbf)	100 N (22.5 lbf)
	(Maxum Security lock)		
	Open and Close Latch Device	9 N (2.0 lbf)	100 N (22.5 lbf)

5.2 TEST RESULTS (Continued)

PARAGRAPH	TEST DESCRIPTION	MEASURED	ALLOWED
5.3.2.1	Air Infiltration (ASTM E 283)		
	75 Pa	1.5 L/s•m²	1.5 L/s•m²
	(1.6 PSF)	0.3 CFM/ft²	0.3 CFM/ft²
	The tested specimen meets the performance requirements specified in AAMA/WDMA/CSA 101 / I.S.2 / A440 for air leakage resistance.		
5.3.3.2	Water Penetration (ASTM E 547)		
	140 Pa (2.9 PSF)	No Leakage	No Leakage
	With/without screen		
5.3.4.2	Uniform Load Deflection (ASTM E 330)		
	Yoke Stiles		
	720 Pa (15.0 PSF) POS	10.00 mm (0.39")	As measured
	720 Pa (15.0 PSF) NEG	9.00 mm (0.35")	As measured
	Interlock Stiles		
	720 Pa (15.0 PSF) POS	7.75 mm (0.31")	As measured
	720 Pa (15.0 PSF) NEG	7.50 mm (0.30")	As measured
	Vertical Mullion		
	720 Pa (15.0 PSF) POS	2.50 mm (0.10")	As measured
	720 Pa (15.0 PSF) NEG	2.25 mm (0.09")	As measured
5.3.4.3	Uniform Load Structural (ASTM E 330)		
	Yoke Stiles		
	1080 Pa (22.5 PSF) POS	0 mm (0.0")	9.75 mm (0.38")
	1080 Pa (22.5 PSF) NEG	0 mm (0.0")	9.75 mm (0.38")
	Interlock Stiles		
	1080 Pa (22.5 PSF) POS	0 mm (0.0")	9.75 mm (0.38")
	1080 Pa (22.5 PSF) NEG	0 mm (0.0")	9.75 mm (0.38")
	Vertical Mullion		
	1080 Pa (22.5 PSF) POS	0 mm (0.0")	9.75 mm (0.38")
	1080 Pa (22.5 PSF) NEG	0 mm (0.0")	9.75 mm (0.38")
5.3.6.3	Deglazing (ASTM E 987)		
	320 N (70 lbf) Stiles	1%	Less than 90%
	230 N (50 lbf) Rails	0%	Less than 90%

5.3 OPTIONAL PERFORMANCE GRADES

PARAGRAPH	TEST DESCRIPTION	MEASURED	ALLOWED
5.3.3.2	Water Penetration (ASTM E 547)		
	220 Pa (4.50 PSF) With/without screen	No Leakage	No Leakage
5.3.4.2	Uniform Load Deflection (ASTM E 330)		
	Yoke Stiles		
	1440 Pa (30.0 PSF) POS	19.25 mm (0.76")	As measured
	1440 Pa (30.0 PSF) NEG	19.75 mm (0.78")	As measured
	Interlock Stiles		
	1440 Pa (30.0 PSF) POS	17.50 mm (0.69")	As measured
	1440 Pa (30.0 PSF) NEG	17.75 mm (0.70")	As measured
	Vertical Mullion		
	1440 Pa (30.0 PSF) POS	5.50 mm (0.22")	As measured
	1440 Pa (30.0 PSF) NEG	5.50 mm (0.22")	As measured
5.3.4.3	Uniform Load Structural (ASTM E 330)		
	Yoke Stiles		
	2160 Pa (45.0 PSF) POS	0 mm (0.0")	9.75 mm (0.38")
	2160 Pa (45.0 PSF) NEG	0 mm (0.0")	9.75 mm (0.38")
	Interlock Stiles		
	2160 Pa (45.0 PSF) POS	0 mm (0.0")	9.75 mm (0.38")
	2160 Pa (45.0 PSF) NEG	0 mm (0.0")	9.75 mm (0.38")
	Vertical Mullion		
	2160 Pa (45.0 PSF) POS	0 mm (0.0")	9.75 mm (0.38")
	2160 Pa (45.0 PSF) NEG	0 mm (0.0")	9.75 mm (0.38")

6.0 5.3.5 ASTM F 842 FORCED ENTRY RESISTANCE TEST RESULTS

Table A1.1 Grade 10

1.2.1 Type "A" Sliding Glass Door

10.2 Results of Operable Panel

	TEST	RESULTS	DESCRIPTION
A2.4.1	A2.1	Passed	No Entry
A2.4.2	A1	Passed	No Entry
A2.4.3	A2	Passed	No Entry
A2.4.4	A3	Passed	No Entry
A2.4.5	A4	Passed	No Entry
A2.4.6	A5	Passed	No Entry
A2.4.7	A6	Passed	No Entry
A2.4.9	A2.1	Passed	No Entry

6.0 5.3.5 ASTM F 842 FORCED ENTRY RESISTANCE TEST RESULTS (Continued)

Table A1.1 Grade 10

1.2.1 Type "C" Sliding Glass Door (Note that both locks were tested for Type 'C')

10.2 Results of Operable Panel

	TEST	RESULTS	DESCRIPTION
A2.6.1	A2.1	Passed	No Entry
A2.6.2	C1	Passed	No Entry
A2.6.3	C2	Passed	No Entry
A2.6.4	C3	Passed	No Entry
A2.6.5	C4	Passed	No Entry
A2.6.6	C5	Passed	No Entry
A2.6.7	C6	Passed	No Entry
A2.6.9	A2.1	Passed	No Entry

1.2.4 Type "D" Sliding Glass Door

10.5 Results of Fixed Panel

	TEST	RESULTS	DESCRIPTION
A2.7.1	A2.1	Passed	No Entry
A2.7.2	D1	Passed	No Entry
A2.7.3	D2	Passed	No Entry
A2.7.4	D3	Passed	No Entry
A2.7.5	A2.3	Passed	No Entry

CAWM 300-96 Forced Entry Resistance Test Results For Sliding Glass Doors

2.3.1 Type "I" Sliding Glass Door

6.1.2 **Results of Operable Panel**

	TEST	RESULTS	DESCRIPTION
6.1.1		Passed	No Entry
6.1.2.1	**A**	Passed	No Entry
6.1.2.2	**B**	Passed	No Entry
6.1.2.3	**C**	Passed	No Entry
6.1.2.4	**G**	Passed	No Entry
6.1.2.5	**D**	Passed	No Entry
6.1.2.6	**E**	Passed	No Entry
6.1.2.7	**F**	Passed	No Entry
6.1.2.8	**G**	Passed	No Entry.

2.3.3 Type "III" Sliding Glass Door (Note that both locks were tested for Type "III")

6.1.4 **Results of Operable Panel**

	TEST	RESULTS	DESCRIPTION
6.1.1		Passed	No Entry
6.1.4.1	**A**	Passed	No Entry
6.1.4.2	**B**	Passed	No Entry
6.1.4.3	**C**	Passed	No Entry
6.1.4.4	**G**	Passed	No Entry
6.1.4.5	**D**	Passed	No Entry
6.1.4.6	**G**	Passed	No Entry

6.0 5.3.5 CAWM 300-96 Forced Entry Resistance Test Results For Sliding Glass Doors (Cont'd)

6.1.5 Results of Fixed Panel

	TEST	RESULTS	DESCRIPTION
6.1.5.1	**A**	Passed	No Entry
6.1.5.2	**B**	Passed	No Entry
6.1.5.3	**C**	Passed	No Entry
6.1.5.4	**G**	Passed	No Entry

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.

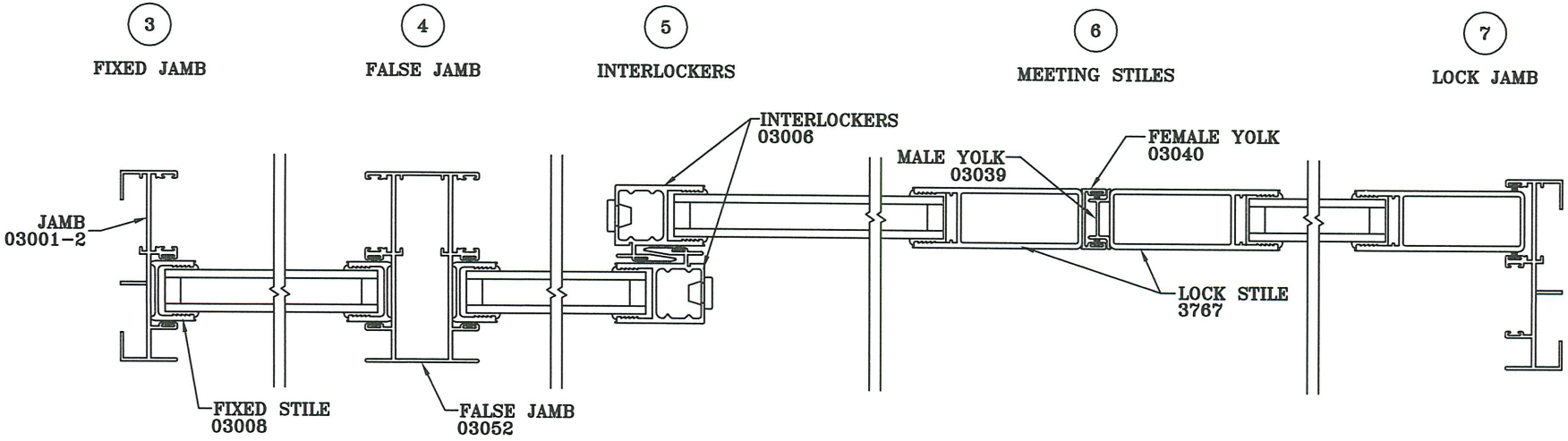
This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory.

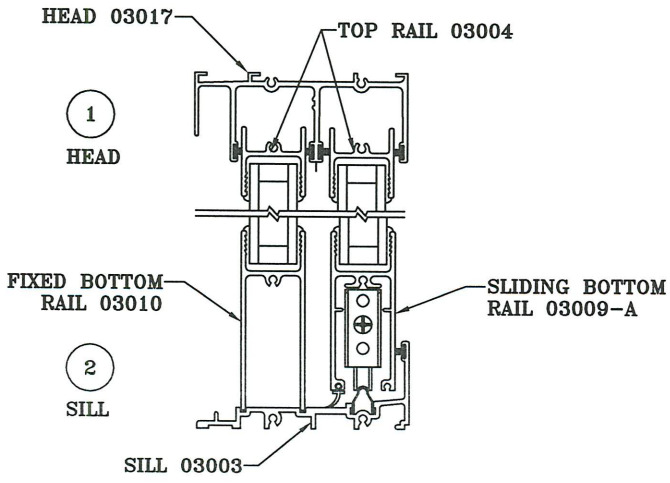
The preceding test results were obtained by using the applicable ASTM Test Methods. This report does not constitute Certification of this product. An approved Administrator/Validator can only grant certification.

Testing Completed: January 19, 2009
Report Completed: January 23, 2009

Pete Cruz
Test Engineer

Jim Cruz
Testing Manager





FLEETWOOD PART #	PART DESCRIPTION	VENDER NAME	VENDER PART #
	ALUMINUM EXTRUSIONS		
03017	HEAD	SIERRA	5715
03003	SILL	SIERRA	2302
03001-2	JAMB	SIERRA	4099
03052	FALSE JAMB	SIERRA	H-2305
03006	STANDARD INTERLOCKERS	SIERRA	H-2563
03004	TOP RAIL	SIERRA	3130
03010	FIXED BOTTOM RAIL	SIERRA	2569
03009-A	SLIDING BOTTOM RAIL	SIERRA	3781
3767	LOCK STILE	SIERRA	H-013146
03008	FIXED STILE	SIERRA	2670
03039	MALE YOLK	SIERRA	904218
03040	FEMALE YOLK	SIERRA	904219

REVISIONS
1 ST. SUBMITTAL
2 ND. SUBMITTAL
3 RD. SUBMITTAL
4 TH. SUBMITTAL
FINAL FIELD AND FILL

DRAWN BY: BSL
DATE: 02/16/09
DRAWING NUMBER: 3KC-□□XIX/CERT

MATERIAL: NORWOOD 3000 SERIES
CUSTOMERS NAME:
JOB NAME: 2009 CERTIFICATION

FLEETWOOD
ALUMINUM PRODUCTS INC.
395 SMITTY WAY CORONA, CALIFORNIA 92879

SCALE: 1/8

SHEET: 1 OF 1