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TESTED FOR

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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 NAFS – North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-08
Class R – PG30: Size Tested 2426 x 1524 mm (96 x 60 in) – Type HS

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:	**6221 Horizontal Slider XO**
CONFIGURATION:	XO Inside Slide
FRAME SIZE:	2426 mm x 1524 mm (95.51" x 60.00")
SASH SIZES:	1219 mm x 1480 mm (47.99" x 58.27")
FIXED SIZE:	1165 mm x 1451 mm (45.87" x 57.13") Daylight Opening
GLASS:	Both lites contained 0.75" overall insulated glass with DS annealed glass on both sides.
SPACER:	The spacers were 1/2" wide, metal 'U' shaped, and single sealed.
GLAZING:	The glass was channel glazed with wrap around gasket.
WEEPAGE:	The sill outside face contained weeps as follows: a) Four 1.75" x 0.25" weep holes. In each hole was inserted a PVC gated weep cover. These weeps drained the active channel. b) Four 0.38" x 0.12" weep holes to drain the fixed channel.
WEATHERING:	Each operable sash contained a strip of 0.220" overall high polypile with center fin full perimeter facing out.

HARDWARE: The operable sash contained the following:

1) Metal cam lock with integral pull handle 21" from each end of the lock stile. Each lock was fastened with a pair of #10 x 0.5" square drive PH screws. When locked, the tongue of the lock engaged a leg on the fixed interlock.
2) An adjustable nylon roller in metal housing at the bottom end of each stile Each roller housing was fastened to its respective stile with a pair of #8 x 3/8" PPH screws.
3) The bottom rail contained a nylon glide at each end.

The head contained a PVC anti-lift block above the operable sash located at the mid-span of each sash.

CONSTRUCTION: The frame corners, sash corners, and mullion to frame joints were all mechanically joined. The frame corners with a pair of #6 x 9/16" PPH screws. The sash corners with a single #6 x 9/16" PPH screws. The fixed interlock was fastened to the frame outside face at each end with a #8 x 3/8" square drive PH screw through a plastic washer.

CAULKING: The frame corners were sealed full profile. The fixed interlock was sealed to the frame at each end where there was metal to metal contact.

ANCHORING: The frame nail-on fin was fastened to a 2" x 6" wooden buck with #8 x 1.63" PFH screws every 12 inches on center full perimeter. Wood furring was applied over the nail-on fin full perimeter and screwed into the wooden buck.

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	68 N (15.3 lbf)	Reported only
	Operating Force	52 N (11.7 lbf)	90 N (20 lbf)
5.3.1.1.3	Latching Device		
	Open and Close Latch Device	4.0 N (0.9 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Infiltration (ASTM E 283)		
	75 Pa	1.0 L/s•m²	1.5 L/s•m²
	(1.6 PSF)	0.2 CFM/ft²	0.3 CFM/ft²
	The tested specimen exceeds 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 (2.86 PSF) With/without screen	No Leakage	No Leakage
5.3.4.2	Uniform Load Deflection (ASTM E 330)		
	720 Pa (15.0 PSF) POS	11.75 mm (0.46")	As measured
	720 Pa (15.0 PSF) NEG	12.00 mm (0.47")	As measured
5.3.4.3	Uniform Load Structural (ASTM E 330)		
	1080 Pa (22.5 PSF) POS	0.00 mm (0.00")	5.75 mm (0.23") Set
	1080 Pa (22.5 PSF) NEG	0.00 mm (0.00")	5.75 mm (0.23") Set

5.2 TEST RESULTS (Continued)

PARAGRAPH	TEST DESCRIPTION	MEASURED	ALLOWED
5.3.6.3	Deglazing (ASTM E 987)		
	320 N (70 lbf) Stiles	10%	Less than 90%
	230 N (50 lbf) Rails	8%	Less than 90%

5.3 OPTIONAL PERFORMANCE GRADES
TEST RESULTS

PARAGRAPH	TEST DESCRIPTION	MEASURED	ALLOWED
5.3.3.2	Water Penetration (ASTM E 547)		
	220 Pa (4.5 PSF) With/without screen	No Leakage	No Leakage
5.3.4.2	Uniform Load Deflection (ASTM E 330)		
	1440 Pa (30.0 PSF) POS	15.00 mm (0.59")	As measured
	1440 Pa (30.0 PSF) NEG	15.50 mm (0.61")	As measured
5.3.4.3	Uniform Load Structural (ASTM E 330)		
	2160 Pa (45.0 PSF) POS	2.00 mm (0.08")	5.75 mm (0.23") Set
	2160 Pa (45.0 PSF) NEG	2.25 mm (0.09")	5.75 mm (0.23") Set

6.0 5.3.5 ASTM F 588 Forced Entry Resistance Test Results For Windows

1.2.1 Type "A" Operable Window Assemblies

Table A1.1 Grade 10

	TEST	RESULTS	ALLOWED
A2.4.1		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
A2.4.8	A7	Passed	No Entry
A2.2.1		Passed	No Entry
A2.3.1		Passed	No Entry
Fixed Panel			
A2.7.1	A2.1	Passed	No Entry
A2.7.3	A2.1	Passed	No Entry

6.0 TEST RESULTS

5.3.5 CAWM 301 - 90 FORCED ENTRY RESISTANCE TEST RESULTS

2.4.1 Type "I" Window

	TEST	RESULTS	ALLOWED
5.1.1	Disassembly	Passed	No Entry
5.1.2	**A**	Passed	No Entry
5.1.3	**B**	Passed	No Entry
5.1.4	**C**	Passed	No Entry
5.1.5	**E**	Passed	No Entry
5.1.6.1	**D**	Passed	No Entry
5.1.7	**E**	Passed	No Entry
Fixed Panel			
5.4.1	A	Passed	No Entry
5.4.2	B	Passed	No Entry

For a complete description of the tested sample refer to the attached twelve (12) pages consisting of the bill of materials, cross section drawings, and individual part drawings.

Cross section drawings 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 relate only to the tested specimen and were obtained by using the applicable ASTM, CAWM, and AAMA 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: June 28, 2010
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