

# Fenestration Testing Laboratory, Inc.

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Report No. : A09C-032-1  
Date : May 8, 2009  
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## TESTED FOR

### **ALL WEATHER**

777 Aldridge Road  
Vacaville, CA 95688

### **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 Casement Combination Window** described in paragraph 4.0 of this report.

### **2.0 TEST REFERENCES**

- 2.1 Standard/Specification for Windows, Doors, and Unit Skylights AAMA/WDMA/CSA 101/IS.2/A440-05  
**C - C60** 2743 x 1524 (108 x 60)
- 2.2 CAWM 301 - 90 Forced Entry Resistance Tests for Windows.
- 2.3 ASTM F 588-07 Standard Test Method for Measuring the Forced Entry Resistance of 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:** 5000T Casement Combination Window

**CONFIGURATION:** XOX

**FRAME SIZE:** 2743 mm x 1524 mm (107.99" x 60.00")

**VENT SIZES:** 908 mm x 1511 mm (35.75" x 59.50")

**FIXED SIZE:** 857 mm x 1454 mm (33.74" x 57.24") Daylight Opening

**GLASS:** Each fixed portion of the frame and the vent panel were each glazed with a 1" overall insulated glass consisting of 1/8" clear annealed glass on both sides and a 3/4" air space.

#### **INSULATED**

**GLASS SPACER:** The spacer was aluminum box type 3/4" wide and single sealed.

#### **GLAZING:**

The glass lites each rested on 1" x 3" x 1/4" high setting blocks set at quarter points of their respective spans and were glazed from the exterior onto a double-sided adhesive foam tape. The lites were also adhered to the frame or vent with seam sealer applied 2" in each direction at each corner under the glazing tape.

From the exterior, the glass lites were each retained full perimeter with aluminum snap-in glazing stops containing a full length pull-in flat vinyl gasket.

**WEEPAGE:**

The sill exterior face contained six (6) 7/16" x 1/8" weep slots. One (1) weep was punched under the center fixed lite at each end and one at each end of the vent panel openings.

Each vent bottom rail also contained a 7/16" x 1/8" weep slot at each end.

At the vents and at the fixed lite, the bottom snap-in stop was notched around each weep allowing water to drain from the glazing pockets.

**WEATHERING:**

The vent contained a strip of hollow bulb weather strip full perimeter facing in and the frame vent opening contained a strip full perimeter facing out. The vent bulb seal was cut away 0.75" at the top end of each vent stile and at the bottom rail in front of each weep.

The glass stops each contained a full length pull-in flat vinyl gasket.

**HARDWARE:**

Each vent panel was supported in frame with a AMC S4000 CSMT 12" four-bar friction hinge at the head and sill. The hinges were each fastened to the frame with four (4) #10 x 3/4" pan head square drive screws and to the vent with five (5) #10 x 3/4" pan head square drive screws.

The vent lock stile contained a metal cam handle lock 14" from each end and one at midspan, for a total of three, each fastened with a pair of machine screws. When closed and locked, the locks each engaged their respective metal strikes with 1/4" high plastic strike pad insert fastened to the integral mullions with a pair of machine screws.

**CONSTRUCTION:**

All frame and vent corners were mitered and welded. The intermediate vertical mullions were slot-fitted and staked into the head and sill.

**CAULKING:**

The following were sealed with seam sealer:

- 1) Frame corners full profile.
- 2) Intermediate vertical mullions to frame full profile.
- 3) Vent panel corners full profile.
- 4) Glass corners to frame and vent panel, 2" in each direction.
- 5) The back of all screws penetrating the frame.
- 6) The back of screws fastening the locks to the vents.

**ANCHORING:**

The frame was mounted over a 2" x 6" wood rough opening and fastened through the nail fin with #6 x 1 5/8" screws every 14" on center. Wood furring was applied over the nail fins and screwed to 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**

<u>PARAGRAPH</u>	<u>TEST DESCRIPTION</u>	<u>MEASURED</u>	<u>ALLOWED</u>
5.3.1.1.1	<b>Operating Force (ASTM E 2068)</b>		
	Breakaway Force	27.0 N (6.07 lbf)	Report Only
	Operating Force	18.0 N (4.04 lbf)	135N (30 lbf)
5.3.1.1.3	<b>Latching Device</b>		
	Open and Close Latch Device	22 N (5.0 lbf)	100 N (22.5 lbf)

5.2 **TEST RESULTS (Continued)**

<u>PARAGRAPH</u>	<u>TEST DESCRIPTION</u>	<u>MEASURED</u>	<u>ALLOWED</u>
5.3.2.1	<b>Air Infiltration (ASTM E 283)</b> 75 Pa (1.6 PSF) The tested specimen exceeds the performance requirements specified in AAMA/WDMA/CSA 101 / I.S.2 / A440 for air leakage resistance.	0.05 L/s•m <sup>2</sup> 0.01 CFM/ft <sup>2</sup>	1.5 L/s•m <sup>2</sup> 0.3 CFM/ft <sup>2</sup>
5.3.3.2	<b>Water Penetration (ASTM E 547)</b> 220 Pa (4.5 PSF) Interior screen	No Leakage	No Leakage
5.3.4.2	<b>Uniform Load Deflection (ASTM E 330) Integral mullion</b> 1440 Pa (30.0 PSF) POS 1440 Pa (30.0 PSF) NEG	3.25 mm (0.13") 5.75 mm (0.23")	As measured As measured
5.3.4.3	<b>Uniform Load Structural (ASTM E 330)</b> 2160 Pa (45.0 PSF) POS 2160 Pa (45.0 PSF) NEG	0.00 mm (0.00") 0.00 mm (0.00")	4.25 mm (0.17") Set 4.25 mm (0.17") Set
5.3.6.4.3	<b>Sash Vertical Deflection Test</b> 270 N (60 lbf.)	1.75 mm (0.07")	18.25 mm (0.72")
5.3.6.6.2	<b>Distributed Load Test</b> 408 N (91.7 lbf.)	No Damage	No Damage

5.3 **OPTIONAL PERFORMANCE GRADES**

**TEST RESULTS**  
PARAGRAPH

<u>PARAGRAPH</u>	<u>TEST DESCRIPTION</u>	<u>MEASURED</u>	<u>ALLOWED</u>
5.3.3.2	<b>Water Penetration (ASTM E 547)</b> 440 Pa (9.0 PSF) Interior screen	No Leakage	No Leakage
5.3.4.2	<b>Uniform Load Deflection (ASTM E 330) Integral Mullion</b> 2880 Pa (60.0 PSF) POS 2880 Pa (60.0 PSF) NEG	4.75 mm (0.19") 6.00 mm (0.24")	As Measured As Measured
5.3.4.3	<b>Uniform Load Structural (ASTM E 330)</b> 4320 Pa (90.0 PSF) POS 4320 Pa (90.0 PSF) NEG	0.00 mm (0.00") 0.00 mm (0.00")	4.25 mm (0.17" Set) 4.20 mm (0.17" Set)

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

1.2.2 Type "B" Window  
**Table A1.1 Grade 20**

<u>TEST</u>	<u>RESULTS</u>	<u>ALLOWED</u>
A2.1	Passed	Disassembly Test
A2.5.2	Passed	No Entry
A2.5.3	Passed	No Entry
A2.5.4	Passed	No Entry
A2.2	Passed	No Entry
A2.3	Passed	No Entry

**6.1 5.3.5 CAWM 301 - 90 FORCED ENTRY RESISTANCE TEST RESULTS**

2.4.2 Type "II" Window

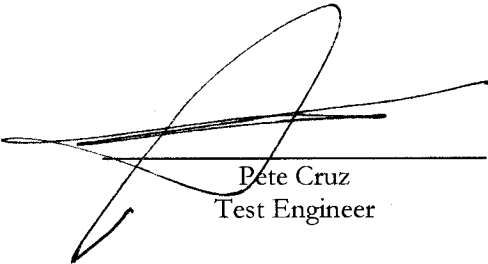
	<u>TEST</u>	<u>RESULTS</u>	<u>ALLOWED</u>
	5.2.1	Passed	Disassembly Test
	5.2.2 A	Passed	No Entry
	5.2.3 B	Passed	No Entry
	5.2.4 C	Passed	No Entry
	5.2.5 E	Passed	Hand and Tool Manipulation Test.

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.

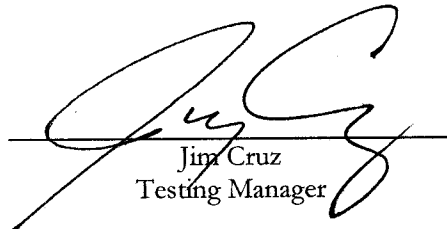
This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory.

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: April 20, 2009  
Report Completed: May 8, 2009



Pete Cruz  
Test Engineer



Jim Cruz  
Testing Manager