STRUCTURAL PERFORMANCE TEST REPORT

Report No: *NCTL-110-9326-4*
Test Date: *07/30/04*
Report Date: *08/11/04*
Expiration Date: *07/31/08*

Client: *All Seasons Door & Window, Inc.*
28 Edgeboro Road
East Brunswick, NJ 08816

Test Specimen: *All Seasons Door & Window, Inc.'s Series "2500" Project-In-At-Top (P.I.T.) Aluminum Prime Window (AP-AW100 60x36)*

Test Specification: *AAMA/NWWDA 101/I.S.2-97, "Voluntary Specifications for Aluminum, Vinyl (PVC), and Wood Windows and Glass Doors." AAMA 910-93 "Voluntary Life Cycle Specifications and Test Methods for Architectural Grade Windows and Sliding Glass Doors."*

TEST SPECIMEN DESCRIPTION

General: *The test specimen was a project-in-at-top (P.I.T.) aluminum prime window measuring 60-1/8" wide by 36" high overall. The vent measured 58-1/4" wide by 34-5/16" high. The frame and vent were thermally broken using poured urethane thermal barriers, debridged to 3/16". One (1) metal lock handle/ lock was located at 14" from each end of the top rail. The metal keepers were located on the head at the lock positions. One (1) metal snubber was located at 13-1/8" from each end and at midspan of the bottom rail. The metal keepers were located on the sill at the snubber positions. One (1) metal limit arm was located at the top of each jamb/ stile. Standard four (4) bar hinge hardware was located at the bottom of each jamb/ stile. A wood reinforcement measuring 1-1/2" x 5/8" x 59-1/8" was fastened to the web of the head and sill with screws through the keeper and snubber hardware and additionally with screws through each end and at midspan of the head. An L-shaped extruded aluminum center sill leg was fastened to the sill with six (6) evenly spaced screws. The frame and vent were of mitered corner construction with staked-in-place aluminum corner keys.*

Glazing: *The vent was interior glazed using sealed insulating glass with adhesive foam tape and foam-filled bulb-vinyl back-beddings, an interior flexible vinyl glazing gasket and a snap-in extruded aluminum glazing bead. The overall insulating glass thickness was 1" consisting of two (2) lites of 3/16" thick tempered glass and one (1) space created by a desiccant-filled aluminum spacer system. The exterior glazing perimeter was sealed with a silicone sealant. The glazing channels were back-filled with a silicone sealant.*

Weatherseals: *A single strip of foam-filled bulb-vinyl weatherstrip was located at the frame and vent perimeters.*

Weeps: *No weeps employed.*

Interior & Exterior Surface Finish: *Brown painted aluminum.*

Sealant: *The frame and vent corners were sealed with a small-joint sealant. The frame and vent corner stakes were sealed with a small-joint sealant. The full length of the center sill leg was sealed to the sill with a silicone sealant.*

Insect Screen: *No screen employed.*

TEST RESULTS

Note: Unless otherwise noted, all Paragraph references are from the AAMA 910-97 specification.

Par. No.	*Title of Test & Method*	*Measured*	*Allowed*
2.1.2	*Air Infiltration - Prior to Cycling*		
	6.24 psf (50 mph)	*0.1 cfm/ft² (<0.01 cfm/ft²)*	*0.1 cfm/ft²*
2.1.3	*Water Resistance - Prior to Cycling*		
	5.0 gph/ft², 15 mins.		
	WTP= 8.0 psf	*No Leakage*	*No Leakage*
	Life Cycle Test		
	1st half - 1250 total cycles		
2.1.4	*2.2 Vent Cycling*	*Meets As Stated*	
2.1.5	*2.3 Locking Hardware Cycling*	*Meets As Stated*	
2.1.7	*Misuse Test*		
	2.5.5.1 Ventilator Torsion Test - 50#	*Meets As Stated*	
	2.5.5.2 Balance Arm Load Test - 50#	*Meets As Stated*	
	2.5.5.3 Vent Lateral Racking Test – 50#	*Meets As Stated*	
	Life Cycle Test		
	2nd half - 1250 total cycles		
2.1.8	*2.2 Vent Cycling*	*Meets As Stated*	
2.1.9	*2.3 Locking Hardware Cycling*	*Meets As Stated*	
2.1.11	*Air Infiltration - After Cycling*		
	6.24 psf (50 mph)	*0.1 cfm/ft² (<0.01 cfm/ft²)*	*0.1 cfm/ft²*
2.1.12	*Water Resistance - After Cycling*		
	5.0 gph/ft², 15 mins.		
	WTP= 8.0 psf	*No Leakage*	*No Leakage*
*2.1.4.1 ** (101-97)*	*Uniform Load Deflection Test*		
	Deflections Under Load		
	40.0 psf Exterior	*0.003"*	*0.161"*
	40.0 psf Interior	*0.006"*	*0.161"*

TEST RESULTS *(Cont.)*

Note: Unless otherwise noted, all Paragraph references are from the AAMA 910-97 specification.

Par. No.	*Title of Test & Method*	*Measured*	*Allowed*
*2.1.4.2 ** (101-97)	*Uniform Load Structural - ASTM E330*		
	Permanent Set		
	60.0 psf Exterior	*0.000"*	*0.056"*
	60.0 psf Interior	*0.000"*	*0.056"*
2.1.8 (101-97)	*Forced Entry Resistance - ASTM F588*		
	Level 10 (See Appendix A for test results)	*Meet As Stated*	
2.2.4.5.3	*Vent Torsion – 15 lbf*	*1.220”*	*1.690”*
2.2.4.5.4	*Horizontal Concentrated Load on Latch Rail*		
	30 lbf inward	*0.030”*	*0.060”*
	30 lbf outward	*0.040”*	*0.060”*
2.2.4.5.5	*Horizontal Concentrated Load on Latch Rail*		
	30 lbf up	*0.020”*	*0.060”*
	30 lbf down	*0.020”*	*0.060”*

OPTIONAL PERFORMANCE

4.3 (101-97)	*Water Resistance - Prior to Cycling*		
	5.0 gph/ft², 15 mins.		
	WTP= 12.0 psf	*No Leakage*	*No Leakage*
	Water Resistance - After Cycling		
	5.0 gph/ft², 15 mins.		
	WTP= 12.0 psf	*No Leakage*	*No Leakage*
*4.4.1 ** (101-97)*	*Uniform Load Deflection Test*		
	Deflections Under Load		
	100.0 psf Exterior	*0.004"*	*0.161"*
	100.0 psf Interior	*0.014"*	*0.161"*
*4.4.2 ** (101-97)*	*Uniform Load Structural - ASTM E330*		
	Permanent Set		
	150.0 psf Exterior	*0.001"*	*0.056"*
	150.0 psf Interior	*0.001"*	*0.056"*

*** No glass breakage or permanent damage causing the unit to be inoperable.*

TEST COMPLETED 07/30/04

The tested specimen meets (or exceeds) the performance levels specified in Table 2.1 of AAMA/ NWWDA 101/I.S.2-97 for air infiltration. The listed results were secured by using the designated test methods and indicate compliance with the performance requirements of the referenced specification paragraphs for the AP-AW100 60x36 product designation.

Detailed drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by NCTL for a period of four (4) years. The results obtained apply only to the specimen tested. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen may be drawn from this test. This report does not constitute certification of the product which may only be granted by a certification program validator.

NATIONAL CERTIFIED TESTING LABORATORIES

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APPENDIX A

Forced Entry Resistance Test Results

***Test Method**: ASTM F588-97, "Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact".*

TEST RESULTS

Paragraph No.	*Loads*	*Duration*	*Measured*	*Allowed*
10.1-Lock Manipulation		*5 Minutes*	*No Entry*	*No Entry*
10.2.2.1-Test B1	*L2= 75 lbf*	*1 Minute*	*No Entry*	*No Entry*
10.2.2.2-Test B2	*L1=150 lbf* *L2= 75 lbf*	*1 Minute*	*No Entry*	*No Entry*
10.2.2.3-Test B3	*L1=150 lbf* *L2= 75 lbf*	*1 Minute*	*No Entry*	*No Entry*
10.2.2.4 Lock Manipulation		*5 Minutes*	*No Entry*	*No Entry*