STRUCTURAL PERFORMANCE TEST REPORT

Report No: *NCTL-110-8058-1*
Test Date: *04/05/02*
Report Date: *07/29/02*
Expiration Date: *04/30/06*

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

Test Specimen: *All Seasons Door & Window, Inc.'s Model "A150" Tilt Double Hung Aluminum Prime Window (H-C45 56x91).*

Test Specification: *AAMA/NWWDA 101/I.S.2-97, "Voluntary Specifications for Aluminum, Vinyl (PVC), and Wood Windows and Glass Doors."*

TEST SPECIMEN DESCRIPTION

General: *The test specimen was a one-over-one tilt double hung aluminum prime window measuring 56" wide by 91" high overall. The top sash measured 52-1/4" wide by 44-7/8" high. The bottom sash measured 53" wide by 44-7/8" high. The frame and sash were thermally broken using poured urethane thermal barriers, debridged to 3/32". Both sash were removable via a double spiral balance with locking tilt shoe located in each jamb track. One (1) metal cam-type sweep lock was located at 13-5/8" from each end of the interior meeting rail. The full length keeper was extruded onto the exterior meeting rail. One (1) adjustable position extruded aluminum spring-loaded snap-lock was located at 12" from each end of the head. The full length keeper was extruded onto the top rail. One (1) metal lockable tilt latch was located at each end of the top rail and interior meeting rail. One (1) solid steel pivot bar was fastened with one (1) screw at each end of the exterior meeting rail. A rigid parting vinyl was located at each jamb. A rigid vinyl sash stop was snap-fitted at the top of each interior jamb track. An extruded aluminum head expander was pressure-fitted at the head. One (1) full length wood reinforcement measuring 1" wide by 1/4" thick was housed by the top sash stiles. The frame and sash were of double screw butt-type corner construction.*

Glazing: *Both sash were channel glazed using sealed insulating glass with a flexible vinyl glazing bead. The overall insulating glass thickness was 7/8" consisting of two (2) lites of double strength annealed glass and one (1) space created by a desiccant-filled aluminum spacer system.*

Weatherseals: *A single strip of center fin weatherstrip (0.220" high) was located at the head, sill, top rail and exterior meeting rail. Double strips of center fin weatherstrip (0.220" high) were located at the interior meeting rail and all sash stiles. A single strip of two (2) leaf flexible vinyl weatherstrip was located at the bottom rail.*

Weeps: *No apparent weeps employed.*

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

Sealant: *The glazing bead was sealed to the glass and to the sash members on all sides with a silicone sealant. The frame corners were sealed with a silicone sealant.*

Screen: *No insect screen employed.*

TEST RESULTS

Par. No.	*Title of Test & Method*		*Measured*	*Allowed*
2.2.1.6.1	*Operating Force*			
	Top Sash	*Up*	*36 lbf*	*45 lbf*
		Down	*32 lbf*	*45 lbf*
	Bottom Sash	*Up*	*34 lbf*	*45 lbf*
		Down	*38 lbf*	*45 lbf*
2.2.1.6.2	*Deglazing - ASTM E987*			
	Top Sash			
	Top Rail (70 lbf)		*6.1 % (0.031")*	*<100%*
	Meeting Rail (70 lbf)		*5.0 % (0.025")*	*<100%*
	Left Stile (50 lbf)		*1.6 % (0.008")*	*<100%*
	Right Stile (50 lbf)		*2.6 % (0.013")*	*<100%*
	Bottom Sash			
	Meeting Rail (70 lbf)		*3.6 % (0.018")*	*<100%*
	Bottom Rail (70 lbf)		*5.6 % (0.028")*	*<100%*
	Left Stile (50 lbf)		*2.4 % (0.012")*	*<100%*
	Right Stile (50 lbf)		*3.2 % (0.016")*	*<100%*
2.1.2	*Air Infiltration - ASTM E283*			
	1.57 psf (25 mph)		*0.1 cfm/ft²* *(0.11 cfm/ft²)*	*0.3 cfm/ft²*
*2.1.3 **	*Water Resistance - ASTM E547*			
	5.0 gph/ft²			
	WTP= 4.50 psf		*No Leakage*	*No Leakage*
*2.1.4.2 ***	*Uniform Load Structural - ASTM E330*			
	45.0 psf Exterior		*0.010"*	*0.206"*
	45.0 psf Interior		*0.002"*	*0.206"*
2.1.8	*Forced Entry Resistance - ASTM F588*			
	Grade 10	*(See Appendix A for test results)*	*Meets As Stated*	

OPTIONAL PERFORMANCE

Par. No.		*Title of Test & Method*	*Measured*	*Allowed*
4.3	*	*Water Resistance - ASTM E547 & E331* *5.0 GPH/FT²* *WTP= 7.50 psf*	*No Leakage*	*No Leakage*
4.4.2	**	*Uniform Load Structural - ASTM E330*		
		67.5 psf Exterior	*0.005"*	*0.206"*
		67.5 psf Interior	*0.010"*	*0.206"*

* *Tested without screen only.*

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

TEST COMPLETED 04/05/02

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 H-C45 56x91 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

MARC A. CRAMER
Technician

SCOTT R. HANLON
Manager of Testing Services

MAC/amb

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*
10.2.1.1-Test A1	*L1=150 lbf*	*1 Minute*	*No Entry*	*No Entry*
10.2.1.2-Test A2	*L1=150 lbf* *L2= 75 lbf interior*	*1 Minute*	*No Entry*	*No Entry*
10.2.1.3-Test A3	*L1=150 lbf* *L2= 75 lbf exterior*	*1 Minute*	*No Entry*	*No Entry*
10.2.1.4-Test A4	*L1=150 lbf* *L2= 75 lbf interior*	*1 Minute*	*No Entry*	*No Entry*
10.2.1.5-Test A5	*L1=150 lbf* *L2= 75 lbf exterior*	*1 Minute*	*No Entry*	*No Entry*
10.2.1.7-Test A7	*L1=150 lbf* *L2= 75 lbf interior* *L3= 25 lbf interior*	*1 Minute*	*No Entry*	*No Entry*
10.2.1.8 Lock Manipulation		*5 Minutes*	*No Entry*	*No Entry*