



NATIONAL CERTIFIED TESTING LABORATORIES

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STRUCTURAL PERFORMANCE TEST REPORT

REPORT NO: NCTL-110-6550-2
TEST DATE: 01/19/99
REPORT DATE: 01/21/99
EXPIRATION DATE: 01/31/02
REVISION DATE: 01/26/99

Client: Silver Line Building Products
1 Silver Line Drive
North Brunswick, NJ 08902

Test Specimen: Silver Line's Series "8500" Tilt Double Hung Vinyl Prime Window
(H-C40* 48x72).

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 vinyl prime window measuring 48" wide by 72" high overall. The top sash measured 44-1/8" wide by 35-7/8" high. The bottom sash measured 44-5/8" wide by 35-7/8" high. Both sash were removable via a single coiled spring balance with locking tilt shoe located in each jamb track. One (1) metal cam-type sweep lock was located at 11-3/4" from each end of the interior meeting rail. The metal keepers were located on the exterior meeting rail at the lock positions. One (1) plastic tilt latch with thumb actuator was located at each end of the interior meeting rail. One (1) plastic lockable tilt latch with thumb actuator was housed at each end of the top rail. One (1) stamped metal pivot bar was housed in a nylon shoe and fastened with one (1) screw at each end of the bottom rail. One (1) stamped metal pivot bar was housed in a nylon shoe and fastened with two (2) screws at each end of the exterior meeting rail. A rigid vinyl sash stop was snap-fitted at the bottom of the exterior jamb tracks. One (1) steel U-shaped reinforcement channel (0.032" thick) filled the length of the top sash stile hollows and both bottom sash rail hollows. One (1) steel square reinforcement channel (0.058" thick) filled the length of the bottom sash stile hollow and the exterior meeting rail hollow. The frame and both sash were of welded mitered corner construction.

Glazing: Both sash were exterior glazed using sealed insulating glass with a silicone back-bedding and a snap-in single leaf dual durometer rigid 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: Two (2) strips of triple fin weatherstrip (0.270" high) were located at all sash stiles. A single strip of center fin weatherstrip (0.270" high) was located at both meeting rails and at the sill. A single strip of center fin weatherstrip (0.200" high) was located at the top rail. A single strip of Q-Lon weatherstrip was located at the bottom rail.

Weeps: One (1) weep hole measuring 1/4" in diameter was located at 3" from each end of the bottom rail. One (1) weep hole measuring 1/4" in diameter was located at 2-3/4" from each end of the exterior meeting rail.

Interior & Exterior Surface Finish: White vinyl (PVC).

Sealant: No apparent sealant applied.

Screen: No insect screen employed.

TEST RESULTS

Note: The following primary performance results on a 54" x 90" specimen are referenced from NCTL-110-6550-1, test date of 12/18/98.

<u>Par. No.</u>	<u>Title of Test & Method</u>		<u>Measured</u>	<u>Allowed</u>	
2.2.1.6.1	Operating Force Top Sash	Up	22.0 lbf	45.0 lbf	
		Down	9.0 lbf	45.0 lbf	
	Bottom Sash	Up	34.0 lbf	45.0 lbf	
		Down	10.0 lbf	45.0 lbf	
2.2.1.6.2	Deglazing - ASTM E987 Exterior Sash	Top Rail (70 lbf)	2.0% (0.010")	<100%	
		Meeting Rail (70 lbf)	3.0% (0.015")	<100%	
	Left Hand Stile (50 lbf)	3.0% (0.015")	<100%		
	Right Hand Stile (50 lbf)	2.2% (0.011")	<100%		
	Interior Sash	Meeting Rail (70 lbf)	1.8% (0.009")	<100%	
		Bottom Rail (70 lbf)	2.2% (0.011")	<100%	
		Left Hand Stile (50 lbf)	2.6% (0.013")	<100%	
		Right Hand Stile (50 lbf)	1.6% (0.008")	<100%	
	2.1.2	Air Infiltration - ASTM E283 0.57 psf (15 mph)		0.1 cfm/ft ²	_____
			1.57 psf (25 mph)	0.2 cfm/ft ²	0.3 cfm/ft ²
2.1.3 *	Water Resistance - ASTM E547 5.0 GPH/FT ² WTP= 4.50 psf		No Leakage	No Leakage	
2.1.4.2 **	Uniform Load Structural - ASTM E330 45.0 psf Exterior 45.0 psf Interior		0.075"	0.197"	
			0.041"	0.197"	
2.1.8	Forced Entry Resistance - ASTM F588 Grade 10 (See Appendix A for test results)		Meets As Stated		

OPTIONAL PERFORMANCE

Note: All optional performance results (except water results) are from the downsized 48" x 72" specimen as described in this report.

4.3	*	Water Resistance - ASTM E547 & E331 5.0 GPH/FT ² WTP = 6.75 psf	No Leakage	No Leakage
4.4.2	**	Uniform Load Structural - ASTM E330 60.0 psf Exterior 60.0 psf Interior	0.059" 0.032"	0.173" 0.173"

Note: At the request of the client, an additional structural load test was performed per the ASTM E330 test method. The results are as follows:

82.0 psf Interior	0.087"	0.173"
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* Tested with and without screen

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

TEST COMPLETED 01/19/99

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-C40* 48x72 product designation.

Detailed drawings were available for laboratory records and compared 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 Method for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact".

TEST RESULTS

<u>Paragraph No.</u>	<u>Loads</u>	<u>Duration</u>	<u>Measured</u>	<u>Allowed</u>
10.1-Lock Manipulation		5 Minutes	No Entry	No Entry
10.2.1.1-Test A1				
Interior Sash	L1=150 lbf	1 Minute	No Entry	No Entry
Exterior Sash	L1=150 lbf	1 Minute	No Entry	No Entry
10.2.1.2-Test A2				
Interior Sash	L1=150 lbf L2= 75 lbf interior	1 Minute	No Entry	No Entry
Exterior Sash	L1=150 lbf L2= 75 lbf interior	1 Minute	No Entry	No Entry
10.2.1.3-Test A3				
Interior Sash	L1=150 lbf L2= 75 lbf exterior	1 Minute	No Entry	No Entry
Exterior Sash	L1=150 lbf L2= 75 lbf exterior			
10.2.1.4-Test A4				
Interior Sash	L1=150 lbf L2= 75 lbf interior	1 Minute	No Entry	No Entry
Exterior Sash	L1=150 lbf L2= 75 lbf interior			
10.2.1.5-Test A5				
Interior Sash	L1=150 lbf L2= 75 lbf exterior	1 Minute	No Entry	No Entry
Exterior Sash	L1=150 lbf L2= 75 lbf exterior			
10.2.1.6-Test A6				
	L1=150 lbf L2= 75 lbf exterior L3= 25 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