



**AAMA/WDMA/CSA 101/I.S.2/A440-05  
TEST REPORT**

**Rendered to:**

**VEKA, INC.**

**SERIES/MODEL: DH56WW/Sloped Sill  
PRODUCT TYPE: PVC Double Hung Window**

<b>Title</b>	<b>Summary of Results</b>
Primary Product Designator	H-LC50 1372 x 1924 (54 x 76)
Design Pressure	±2400 Pa (±50.16 psf)
Operating Force (in motion)	133 N (30 lbf)
Air Infiltration	0.6 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)
Uniform Load Structural Test Pressure	±3600 Pa (±75.24 psf)
Forced Entry Resistance	Grade 10

**Test Completion Date:** 8/31/07

Reference must be made to Report No. 75481.01-501-47, dated 10/09/07 for complete test specimen description and data.



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Rendered to:

VEKA, INC.  
100 Veka Drive  
P.O. Box 250  
Fombell, Pennsylvania 16123-0250

Report No.: 75481.01-501-47  
Test Dates: 07/26/07  
Through: 08/31/07  
Report Date: 10/09/07  
Expiration Date: 08/31/11

**Project Summary:** Architectural Testing, Inc. was contracted by Veka, Inc. to witness testing on a Series/Model DH56WW/Sloped Sill, PVC double hung window at Veka's test facility in Fombell, Pennsylvania. The sample tested successfully met the performance requirements for an H-LC50 1372 x 1924 (54 x 76) rating. Test specimen description and results are reported herein. The sample was provided by the client.

**Test Specification:** The test specimen was evaluated in accordance with AAMA/WDMA/CSA 101/LS.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights*.

**Test Specimen Description:**

**Series/Model:** DH56WW/Sloped Sill

**Product Type:** PVC Double Hung Window

**Overall Size:** 1372 mm (54") wide by 1925 mm (75-3/4") high

**Top Sash Size:** 1283 mm (50-1/2") wide by 930 mm (36-5/8") high

**Bottom Sash Size:** 1308 mm (51-1/2") wide by 956 mm (37-5/8") high

**Screen Size:** 953 mm (37-1/8") wide by 1283 mm (50-1/2") high

**Overall Area:** 2.64 m<sup>2</sup> (28.4 ft<sup>2</sup>)

**Test Specimen Description: (Continued)**

**Finish:** All PVC was white.

**Frame Construction:** The extruded PVC frame was of mitered and welded corner construction.

**Sash Construction:** The extruded PVC sash were of mitered and welded corner construction.

**Weatherstripping:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
0.187" backed by 0.270" high center fin pile	1 Row	Interior dam leg of sill
0.187" backed by 0.270" high center fin pile	1 Row	Head
0.187" backed by 0.270" high center fin pile	1 Row	Top rail, keeper rail, and lock rail
0.187" backed by 0.270" high center fin pile	2 Rows	All sash stiles
0.187" backed 90° offset carrier with 0.350" diameter foam-filled bulb	1 Row	Bottom lift rail

**Glazing Details:** The sash were exterior glazed with nominal 1" thick insulating glass consisting of two sheets of 1/8" clear annealed glass and a silicone foam spacer system, single sealed. The insulating glass units were set from the exterior against a dual-sided adhesive tape and secured with rigid vinyl glazing beads.

**Drainage:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
1-1/4" by 1/4" weepslot with cover	2	Exterior sill face, 4-3/8" from each end
1-1/16" by 1/2" weephole	2	Interior track at jamb/sill intersection

**Test Specimen Description: (Continued)**

**Hardware:**

<u>Description</u>	<u>Quantity</u>	<u>Location</u>
Metal locking cam lock and keeper	2	Lock rail, one 8-1/2" from each end with corresponding keeper on exterior meeting rail
Metal tilt latch with interlocking jamb clip	2	Lock rail, one at each end with corresponding clip fastened to jamb
Plastic tilt latch	2	Top lift rail, one at each end
Cast metal pivot bars	4	Keeper rail and bottom rail, one at each end
Constant force balances	4	Two per jamb

**Reinforcement:** The lock rail, keeper rail, top sash stiles, and top rail contained a formed steel reinforcement, reference Drawing No. RF3001SOM. The lock rail also contained a second formed steel reinforcement, reference Drawing No. RFFD22SOM. The bottom sash stiles and bottom rail contained a formed steel reinforcement, reference Drawing No. RF3101SOM.

**Screen Construction:** The screen was constructed from roll-formed aluminum. The corners were square-cut and secured with snap-in plastic corner keys. Fiber mesh screen cloth was secured with a flexible vinyl spline. A 1/8" high spacer button was located at the each end of the bottom rail.

**Installation:** The unit was installed in a wood buck constructed of Spruce-Pine-Fir construction lumber. The unit was secured through the jambs with ten #8 x 2" long truss head screws, one 6" down from the top and two each at mid-span and 6" up from the bottom. The unit was also secured through the head with three #8 x 2" long truss head screws, one 6" in from each end and at mid-span. The exterior perimeter was sealed with silicone sealant.

**Test Results:** The temperature during testing was 27°C (80°F). The results are tabulated as follows:

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	156 N (35 lbf)	Report Only
	Maintain motion	133 N (30 lbf)	155 N (35 lbf)
	Latches	13 N (3 lbf)	100 N (22.5 lbf)
	Locks	13 N (3 lbf)	100 N (22.5 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	75 Pa (1.6 psf)	0.6 L/s/m <sup>2</sup> (0.12 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.
<i>Note #1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/LS.2/A440-05 for air leakage resistance.</i>			
5.3.3.2	Water Penetration Resistance per ASTM E 547		See Note #2
5.3.4.2	Uniform Load Deflection per ASTM E 330		See Note #2
5.3.4.3	Uniform Load Structural per ASTM E 330		See Note #2
<i>Note #2: The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".</i>			
5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Tests A1 through A7	No entry	No entry
	Sash/Panel Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated

**Test Results: (Continued)**

<u>Paragraph</u>	<u>Title of Test - Test Method</u>	<u>Results</u>	<u>Allowed</u>
5.3.6.3	Deglazing Test		
	In operating direction - 320 N (70 lbf)		
	Top rail	2.3 mm (0.090")	11.4 mm (0.45")
	Keeper rail	2.3 mm (0.090")	11.4 mm (0.45")
	Lock rail	2.0 mm (0.080")	11.4 mm (0.45")
	Bottom rail	2.0 mm (0.080")	11.4 mm (0.45")
	In remaining direction - 230 N (50 lbf)		
	Top left stile	1.3 mm (0.050")	11.4 mm (0.45")
	Top right stile	1.0 mm (0.040")	11.4 mm (0.45")
	Bottom left stile	1.0 mm (0.040")	11.4 mm (0.45")
	Bottom right stile	1.3 mm (0.050")	11.4 mm (0.45")

Optional Performance

4.4.2.6	Water Penetration Resistance per ASTM E 547 (with and without insect screen) 360 Pa (7.52 psf)	No leakage	No leakage
4.4.2.6	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the exterior meeting rail) (Loads were held for 10 seconds) 2400 Pa (50.16 psf) (positive) 2400 Pa (50.16 psf) (negative)	13.5 mm (0.53") 16.3 mm (0.64")	See Note #3 See Note #3

*Note #3: The deflections reported are not limited by AAMA/WDMA/CSA 101/LS.2/A440-05 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

4.4.2.6	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the exterior meeting rail) (Loads were held for 10 seconds) 3600 Pa (75.24 psf) (positive) 3600 Pa (75.24 psf) (negative)	0.8 mm (0.03") 0.8 mm (0.03")	5.1 mm (0.20") max. 5.1 mm (0.20") max.
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Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

**Drawing Reference:** The test specimen drawings have been reviewed by Architectural Testing, Inc. and are representative of the test specimen reported herein.

**List of Official Observers:**

<u>Name</u>	<u>Company</u>
Doug Merry	Veka, Inc.
Barry Bieber	Veka, Inc.
Joe Allison	Architectural Testing, Inc

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

*Joseph E. Allison/sld*

Digitally Signed for: Joseph E. Allison by Sandy L DiCaro

Joseph E. Allison  
Senior Technician

*Lynn George*

Digitally Signed by: Lynn George

Lynn George  
Director – Regional Operations

JEA:sld

Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (13)