Architectural Testing

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

Rendered to:

MASTER WINDOW SYSTEMS, INC.

SERIES/MODEL: Master 2000 Double Hung Window
PRODUCT TYPE: PVC Double Hung Window

	Summary of Results	
Title	**Test Specimen #1**	**Test Specimen #2**
Primary Product Designator	H-R35 1016 x 1676 (40 x 66)	H-R50 1016 x 1676 (40 x 66)
Design Pressure*	1680 Pa (35.0 psf)	2400 Pa (50.0 psf)
Negative Design Pressure*	1920 Pa (40.0 psf)	2400 Pa (50.0 psf)
Operating Force (in motion)	N/A	N/A
Air Infiltration	N/A	N/A
Canadian Air Infiltration/Exfiltration Level*	N/A	N/A
Water Penetration Resistance Test Pressure*	N/A	N/A
Uniform Load Structural Test Pressure	+2520/-2880 Pa (+52.5/-60.0 psf)	±3600 Pa (±75.0 psf)
Forced Entry Resistance	N/A	N/A

*-Optional Secondary Designators

Test Completion Date: 10/18/06

Reference must be made to Report No. 68521.02-501-47, dated 09/13/07 for complete test specimen description and data. Reference ATI Report Numbers 62179.01-501-47 and 67271.01-501-47 for gateway performance test results.

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

Rendered to:

MASTER WINDOW SYSTEMS, INC.
2060 DeFoor Hills Road, N.W.
Atlanta, Georgia 30318

Report No.:	68521.02-501-47
Test Dates:	10/18/06
Through:	10/20/06
Report Date:	09/13/07
Expiration Date:	02/08/10

Project Summary: Architectural Testing, Inc. (ATI) was contracted by Veka, Inc. to witness testing on two Series/Model DH11WW/SLOPE, PVC double hung windows at their test facility in Fombell, Pennsylvania. The samples tested successfully met the performance requirements for the following ratings: Test Specimen #1: H-R35 1016 x 1676 (40 x 66); Test Specimen #2: H-R50 1016 x 1676 (40 x 66). This report is a reissue of the original Report No. 68521.01-501-47. This report is reissued in the name of Master Window Systems, Inc. through written authorization of Veka, Inc. Test specimen description and results are reported herein. Reference ATI Report Numbers 62179.01-501-47 and 67271.01-501-47 for gateway performance test results.

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

Test Specimen Description:

Series/Model: Master 2000 Double Hung Window

Product Type: PVC Double Hung Window

Test Specimen #1: H-R35 1016 x 1676 (40 x 66)

Overall Size: 1016 mm (40") wide by 1676 mm (66") high

Top Sash Size: 930 mm (36-5/8") wide by 822 mm (32-3/8") high

Bottom Sash Size: 59 mm (37-3/4") wide by 822 mm (32-3/8") high

Overall Area: 1.7 m^2 (18.3 ft^2)

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Test Specimen Description: (Continued)

Test Specimen #1: H-R35 1016 x 1676 (40 x 66) (Continued)

Glazing Type: The unit was exterior glazed with 19 mm (3/4") thick, sealed insulation glass, fabricated from two sheets of 2.5 mm (3/32") clear annealed glass and butyl spacer material with stainless steel substrate, single sealed. Each insulating glass unit was set against a dual-sided adhesive tape and secured with rigid vinyl glazing beads.

Reinforcement: The lock rail, bottom rail, and top rail contained an extruded aluminum reinforcement measuring 22.1 mm (0.870") by 21.5 mm (0.846") by 2.4 mm (0.095"), reference Drawing RFSE1347AOM. The exterior meeting rail contained an extruded aluminum reinforcement measuring 18.3 mm (0.720") by 21.5 mm (0.846") by 1.9 mm (0.075"), reference Drawing RFSE1344AOM.

Test Specimen #2: H-R50 1016 x 1676 (40 x 66)

Overall Size: 1016 mm (40") wide by 1676 mm (66") high

Top Sash Size: 930 mm (36-5/8") wide by 822 mm (32-3/8") high

Bottom Sash Size: 59 mm (37-3/4") wide by 822 mm (32-3/8") high

Overall Area: 1.7 m^2 (18.3 ft^2)

Glazing Type: The unit was exterior glazed with 19 mm (3/4") thick, sealed insulation glass, fabricated from two sheets of 3.0 mm (1/8") clear annealed glass and butyl spacer material with stainless steel substrate, single sealed. Each insulation glass unit was set against a dual-sided adhesive tape and secured with rigid vinyl glazing beads.

Reinforcement: The lock rail, bottom rail, and top rail contained an extruded aluminum reinforcement measuring 22.1 mm (0.870") by 21.5 mm (0.846") by 2.4 mm (0.095"), reference Drawing RFSE1347AOM. The exterior meeting rail, and all sash stiles contained an extruded aluminum reinforcement measuring 18.3 mm (0.720") by 21.5 mm (0.846") by 1.9 mm (0.075"), reference Drawing RFSE1344AOM.

Test Specimen Description: (Continued)

The following descriptions apply to all specimens.

Finish: All PVC finish was white.

Frame Construction: The PVC frames were constructed using mitered and welded corner construction.

Sash Construction: The PVC sash were assembled using mitered and welded corner construction.

Weatherstripping:

Description	Quantity	Location
4.7 mm (0.187") backed by 6.9 mm (0.270") high pile with center fin	1 Row	Head, sill, lock rail, top rail
4.7 mm (0.187") backed by 12.7 mm (0.500") high pile with center fin	2 Rows	Exterior meeting rail
4.7 mm (0.187") backed by 6.9 mm (0.270") high pile with center fin	2 Rows	Sash stiles
4.7 mm (0.187") backed by 8.9 mm (0.350") diameter, vinyl jacket/foam filled bulb	1 Row	Bottom rail
25.4 mm (1.0") by 12.7 mm (1/2") by 10.2 mm (0.400") high adhesive backed pile pad	2	Exterior meeting rail, one at each end

Test Specimen Description: (Continued)

Drainage:

Description	Quantity	Location
25.4 mm (1") wide by 4.8 mm (3/16") high weepslot	2	Exterior base of sill, one 76.2 mm from each end
25.4 mm (1") wide by 4.8 mm (3/16") high weepslot	2	Intermediate sill wall, one at each end
25.4 mm (1") wide by 19 mm (3/4") deep weepslot	2	Sill/interior jamb track intersection one at each end
17.1 mm (5/8") wide by leg height high weep notch	2	Sill screen track, two at each end

Hardware:

Description	Quantity	Location
Metal lock and keeper	2	Lock rail, one 203 mm (8") in from ends, mating keepers on the exterior meeting rail
Constant force balance system	4	Two per jamb
Plastic sash tilt latch	4	Lock rail and top rail, one at each end
Metal sash tilt pin	4	Bottom rails, one at each end

Installation: The units were installed in a wood buck constructed of Spruce-Pine-Fir construction lumber and sealed at the interior and exterior perimeter with a silicone sealant, with the exception of an approximate 150 mm (6") void at each interior sill corner. The units were secured to the buck through the jambs with eight #8 x 64 mm (2-1/2") long screws, one each at the top and bottom, and two at approximate mid-span. A nominal 3 mm (1/8") space was maintained at the perimeter between the buck and window frame.

Test Results: The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed

Test Specimen #1: H-R35 1016 x 1676 (40 x 66)

Optional Performance

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)		
	1680 Pa (35.0 psf) (positive)	9.4 mm (0.37")	See Note #1
	1920 Pa (40.0 psf) (negative)	14.2 mm (0.56")	See Note #1

***Note #1**: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.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)		
	2520 Pa (52.5 psf) (positive)	0.1 mm (0.01")	3.9 mm (0.15") max.
	2880 Pa (60.0 psf) (negative)	0.8 mm (0.03")	3.9 mm (0.15") max.

Test Specimen #2: H-R50 1016 x 1676 (40 x 66)

Optional Performance

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 (50.0 psf) (positive)	10.9 mm (0.43")	See Note #1
	2400 Pa (50.0 psf) (negative)	17.8 mm (0.70")	See Note #1
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 (75.0 psf) (positive)	0.5 mm (0.02")	3.9 mm (0.15") max.
	3600 Pa (75.0 psf) (negative)	1.5 mm (0.06")	3.9 mm (0.15") max.

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

This report is reissued in the name of Master Window Systems, Inc. through written authorization of Veka, Inc. to whom the original report was rendered. The original Veka, Inc. Report No. is 68521.01-501-47.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by Architectural Testing, Inc. for a period of four years from the original test date. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product, which may only be granted by the certification program administrator. This report may not be reproduced, except in full, without the approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Digitally Signed by: Lynn George

Lynn George
Project Manager

Digitally Signed by: Michael L. Mackereth

Michael L. Mackereth
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Attachments (pages):
Appendix-A: Alteration Addendum (1)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	09/13/07	N/A	Original report issue - Reissue of Report No. 68521.01-501-47 in the name of Master Window Systems, Inc.

Appendix A

Alteration Addendum

***Note**: No alterations were required.*