



Architectural Testing

TEST REPORT

Report No.: E3406.01-109-47

Rendered to:

MI WINDOWS AND DOORS, LLC
Gratz, Pennsylvania

PRODUCT TYPE: Polyvinyl Chloride (PVC) Awning Window
SERIES/MODEL: 9660

SPECIFICATION(S): AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
AAMA/WDMA/CSA 101/I.S.2/A440-08	Class LC-PG35 1524 x 914 (60 x 36)-AP	Class LC-PG50 1219 x 762* (48 x 30*)-AP
Positive Design Pressure	+1920 Pa (+40.10 psf)	+2400 Pa (+50.13 psf)
Negative Design Pressure	-1680 Pa (-35.09 psf)	-2400 Pa (-50.13 psf)
Air Infiltration	0.3 L/s/m ² (0.06 cfm/ft ²)	N/A
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)	N/A

Test Completion Date: 12/10/14

Reference must be made to Report No. E3406.01-109-47, dated 01/12/15 for complete test specimen description and detailed test results.

1.0 Report Issued To: MI Windows and Doors, LLC
 P.O. Box 370
 650 Market Street
 Gratz, Pennsylvania 17030-0370

2.0 Test Laboratory: Architectural Testing, Inc.
 130 Derry Court
 York, Pennsylvania 17406-8405
 717-764-7700

3.0 Project Summary:

3.1 Product Type: Polyvinyl Chloride (PVC) Awning Window

3.2 Series/Model: 9660

3.2.1 This product also labeled under the following names: 1665 and CTAWN

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method(s). The specimens tested successfully met the performance requirements for the following ratings:

Test Specimen(s)	Title	Summary of Results
1	101/I.S.2/A440-08	Class LC-PG35 1524 x 914 (60 x 36)-AP
2	101/I.S.2/A440-08	Class LC-PG50 1219 x 762* (48 x 30*)-AP

General Note: An asterisk (*) next to the size designation indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.

3.4 Test Dates: 12/08/14 - 12/10/14

3.5 Test Record Retention End Date: All test records for this report will be retained until December 10, 2018.

3.6 Test Location: MI Windows and Doors, LLC test facility in Gratz, Pennsylvania. Calibration of test equipment was performed by Architectural Testing in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.7 Test Specimen Source: The test specimen(s) were provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings on file with Architectural Testing. Any deviations are documented herein or on the drawings.

3.0 Project Summary: (Continued)

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Rick Sawdey	MI Windows and Doors, LLC
Jeremy R. Bender	Architectural Testing, Inc.

4.0 Test Specification(s):

AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Test Specimen #1:

Overall Area: 1.4 m ² (15.0 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1524	60	914	36
Vent	1483	58-3/8	873	34-3/8

Test Specimen #2:

Overall Area: 0.9 m ² (10.0 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1219	48	762	30
Vent	1180	46-7/16	722	28-7/16

The following descriptions apply to all specimens.

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, and jambs	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.0 Test Specimen Description: (Continued)

5.3 Vent Construction:

Vent Member	Material	Description
Rails and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.4 Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.350" high polypile with center fin	1 Row	All vent members
0.187" backed by 0.300" high foam-filled bulb seal	2 Rows	All vent members

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Metal reinforced butyl	1/8" thick clear annealed	1/8" thick clear annealed	Exterior glazing against a bead of silicone and secured with PVC snap-in glazing beads.

Test Specimen #1:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Vent daylight opening	1	1349 x 740	53-1/8 x 29-1/8	1/2"

Test Specimen #2:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Vent daylight opening	1	1046 x 589	41-3/16 x 23-3/16	1/2"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot	1/2" wide by 5/32" high	2	3-1/2" from ends of glazing bead at vent bottom rail

5.7 Hardware:

Description	Quantity	Location
Roto-operator	1	Midspan of sill
Metal snubbers	2	20" from each end of head/top rail
Single point lever lock	2	Each jamb, 6" from sill
Two bar hinge	2	Top of each jamb/stile

5.8 Reinforcement: No reinforcement was utilized.

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the window was sealed with sealant.

Location	Anchor Description	Anchor Location
Head	#8 x 2" long drywall screw	3" from corners and spaced 13" on center, through the frame into the wood buck.
Jambs		3" from each corner and midspan, through the frame into the wood buck

7.0 Test Results: The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen #1:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 22 N (5 lbf) Maintain motion: 18 N (4 lbf) Locks: 22 N (5 lbf)	Report Only 30 N (7 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.3 L/s/m ² (0.06 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type: B - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Awning, Hopper, Projected Hardware Load Test 70 N (15 lbf)	26.9 mm (1.06")	Report Only	
Optional Performance			
Water Penetration, per ASTM E 547 at 580 Pa (12.11 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E 330 Deflections taken at bottom rail +1920 Pa (+40.10 psf) -1680 Pa (-35.09 psf)	2.5 mm (0.10") 16.5 mm (0.65")	Report Only	4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at bottom rail +2880 Pa (+60.15 psf) -2520 Pa (-52.63 psf)	0.5 mm (0.02") 0.8 mm (0.03")	5.8 mm (0.23") max. 5.8 mm (0.23") max.	5, 6

7.0 Test Results: (Continued)

Test Specimen #2:

Title of Test	Results	Allowed	Note
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Optional Performance			
Uniform Load Deflection, per ASTM E 330 Deflections taken at bottom rail +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	4.3 mm (0.17") 11.2 mm (0.44")	Report Only	4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at bottom rail +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	<0.3 mm (<0.01") 0.5 mm (0.02")	4.8 mm (0.19") max. 4.8 mm (0.19") max.	5, 6

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: Without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

Note 5: Loads were held for 10 seconds.

Note 6: 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.

Architectural Testing will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Architectural Testing, Inc. for the entire test record retention period.

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.

Jeremy R. Bender
Senior Technician

Michael D. Stremmel, P.E.
Senior Project Engineer

JRB:asm

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Location of Air Seal (1)

Appendix-C: Complete drawings packet on file with Architectural Testing, Inc.



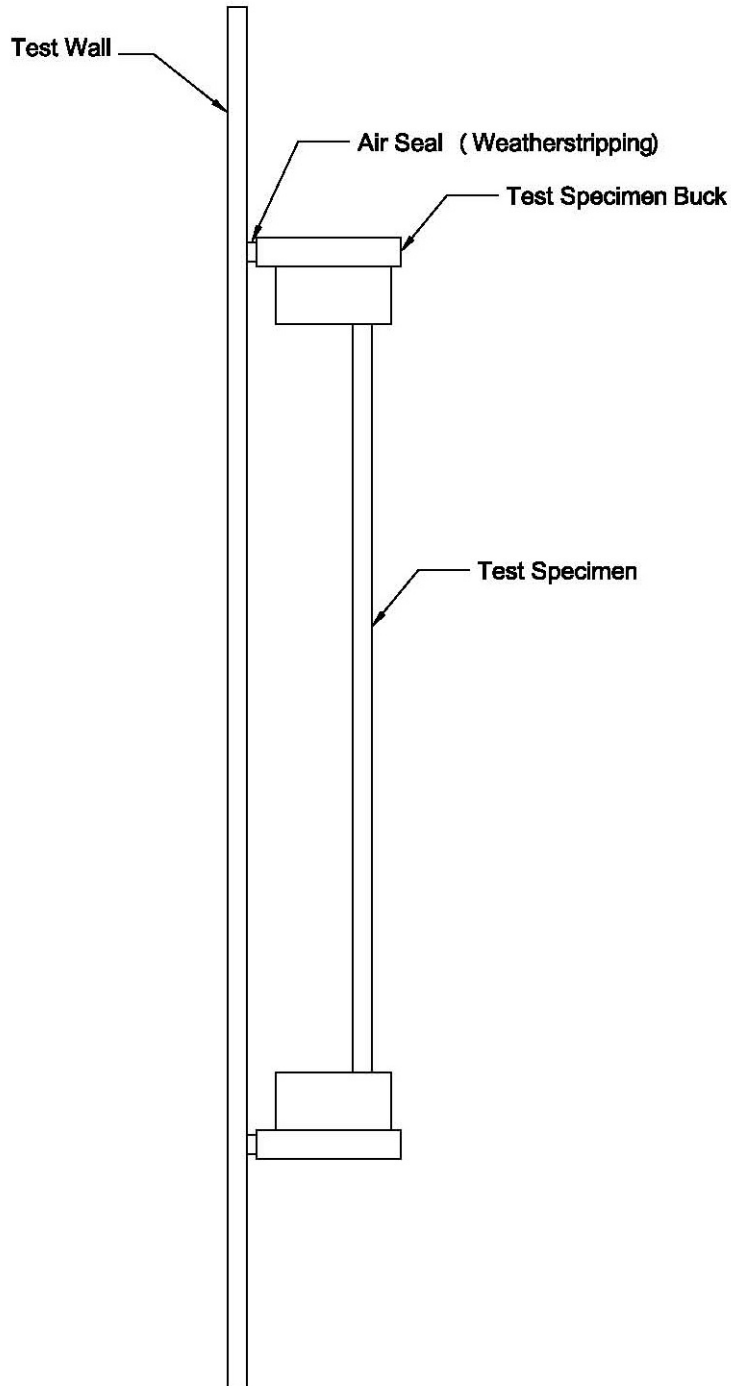
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Appendix A
Alteration Addendum

Note: No alterations were required.

Appendix B

Location of Air Seal: The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.





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Appendix C

Drawing(s)

***Note:** Complete drawings packet on file with Architectural Testing, Inc.*