Architectural Testing

TEST REPORT

Report No.: E2491.01-109-47

Rendered to:

MI WINDOWS AND DOORS, LLC
Gratz, Pennsylvania

PRODUCT TYPE: Polyvinyl Chloride (PVC) Horizontal Sliding Window
SERIES/MODEL: 5800

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

	Summary of Results	
Title	**Test Specimen #1**	**Test Specimen #2**
AAMA/WDMA/CSA 101/I.S.2/A440-08	Class R-PG20 1816 x 1511 (72 x 60)-HS	Class R-PG20 1816 x 1511* (72 x 60*)-HS
Design Pressure	±960 Pa (±20.05 psf)	±960 Pa (±20.05 psf)
Air Infiltration	0.7 L/s/m^2 (0.13 cfm/ft^2)	N/A
Water Penetration Resistance Test Pressure	260 Pa (5.43 psf)	N/A

Test Completion Date: 11/05/14

Reference must be made to Report No. E2491.01-109-47, dated 12/08/14 for complete test specimen description and detailed test results.

1.0 Report Issued To: MI Windows and Doors, LLC
P.O. Box 370
650 West 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) Horizontal Sliding Window

3.2 Series/Model: 5800

3.2.1 This product is also labeled under the following name: 5800TS

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 R-PG20 1816 x 1511 (72 x 60)-HS
2	101/I.S.2/A440-08	Class R-PG20 1816 x 1511* (72 x 60*)-HS

***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: 11/03/14 - 11/05/14

3.5 Test Record Retention End Date: All test records for this report will be retained until November 5, 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:

Name	Company
Rick Sawdey	MI Windows and Doors, LLC
Aaron M. Shultz	Architectural Testing, Inc.

4.0 Test Specification(s):

AAMA/WDMA/CSA 101/I.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 Specimens #1 and #2:

Overall Area: 2.7 m^2 (29.5 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	1816	71-1/2	1511	59-1/2
Operable sash	914	36	1453	57-3/16
Screen	889	35	1464	57-5/8

The following descriptions apply to all specimens.

5.2 Frame Construction:

Frame Member	**Material**	**Description**
Head, sill, and jambs	PVC	Extruded, the interior sill track utilized a snap-in PVC roller track
Fixed meeting rail	PVC	Extruded

	Joinery Type	**Detail**
All corners	Mitered	Thermally welded
Fixed meeting stile	Butted	Secured to the head and sill with two #6 x 1-1/2" pan head screws with a 3/8" diameter washer with rubber gasket at each end

5.0 Test Specimen Description: (Continued)

5.3 Sash Construction:

Sash 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 0.270" high polypile with center fin	1 Row	Fixed meeting rail
0.187" backed by 0.270" high woolpile with center fin	1 Row	Operable sash rails and stiles

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 system	3/32" clear annealed	3/32" clear annealed	The glass was exterior glazed against 3/8" wide by 1/8" thick glazing tape and secured with snap-in PVC glazing beads.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Operable sash daylight opening	1	835 x 1372	32-7/8 x 54	1/2"
Fixed daylight opening	1	835 x 1372	32-7/8 x 54	1/2"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with cover	1-5/8" wide by 1/4" high	2	2-1/4" from each end of the sill face
Weepslot	1" wide by 3/16" high	2	Interior sill track, 1-3/4" from frame jambs
Oval weephole	5/16" diameter	2	Exterior sill track, 2" from frame jambs
Weepslot	1" wide by 1/4" high	2	Interior sill hollow ends

5.7 Hardware:

Description	Quantity	Location
Lock with adjacent keeper	2	7" from the meeting rail ends
Roller assembly	2	Each end of the operable panel bottom rail

5.8 Reinforcement:

Drawing Number	Location	Material
4041	Operable panel meeting stile	Aluminum
4043	Fixed meeting stile	Aluminum

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Roll-formed aluminum	Square-cut and keyed	Fiberglass	Flexible vinyl spline

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.

Test Specimen #1:

Location	Anchor Description	Anchor Location
Head, sill, and jambs	#6 x 1-5/8" drywall screw	1" from corners and spaced 10" on center, through the mounting fin into the wood buck

Test Specimen #2:

Location	Anchor Description	Anchor Location
Jambs and head	#8 x 1-1/2" pan head screws	4" from corners and one at 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: 111 N (25 lbf) Maintain motion: 27 N (6 lbf) Locks: 13 N (3 lbf)	Report Only 157 N (35 lbf) max. 102 N (23 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.7 L/s/m^2 (0.13 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: A - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (70 lbf) Remaining direction, 230 N (50 lbf)	 Pass Pass	 Meets as stated Meets as stated	

7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 260 Pa (5.43 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting rail +960 Pa (+20.05 psf) +960 Pa (+20.05 psf)	 32.0 mm (1.26") 29.0 mm (1.14")	 Report Only	 4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting rail +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	 2.0 mm (0.08") 2.0 mm (0.08")	 5.8 mm (0.23") max. 5.8 mm (0.23") max.	 5, 6

Test Specimen #2:

Title of Test	Results	Allowed	Note
Optional Performance			
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting rail +960 Pa (+20.05 psf) +960 Pa (+20.05 psf)	 30.5 mm (1.20") 30.9 mm (1.22")	 Report Only	 4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting rail +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	 1.8 mm (0.07") 2.0 mm (0.08")	 5.8 mm (0.23") max. 5.8 mm (0.23") max.	 5, 6

7.0 Test Results: (Continued)

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: With and 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 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.

Digitally Signed by: Aaron M. Shultz

Aaron M. Shultz
Technician

Digitally Signed by: Michael D. Stremmel

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

AMS: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.

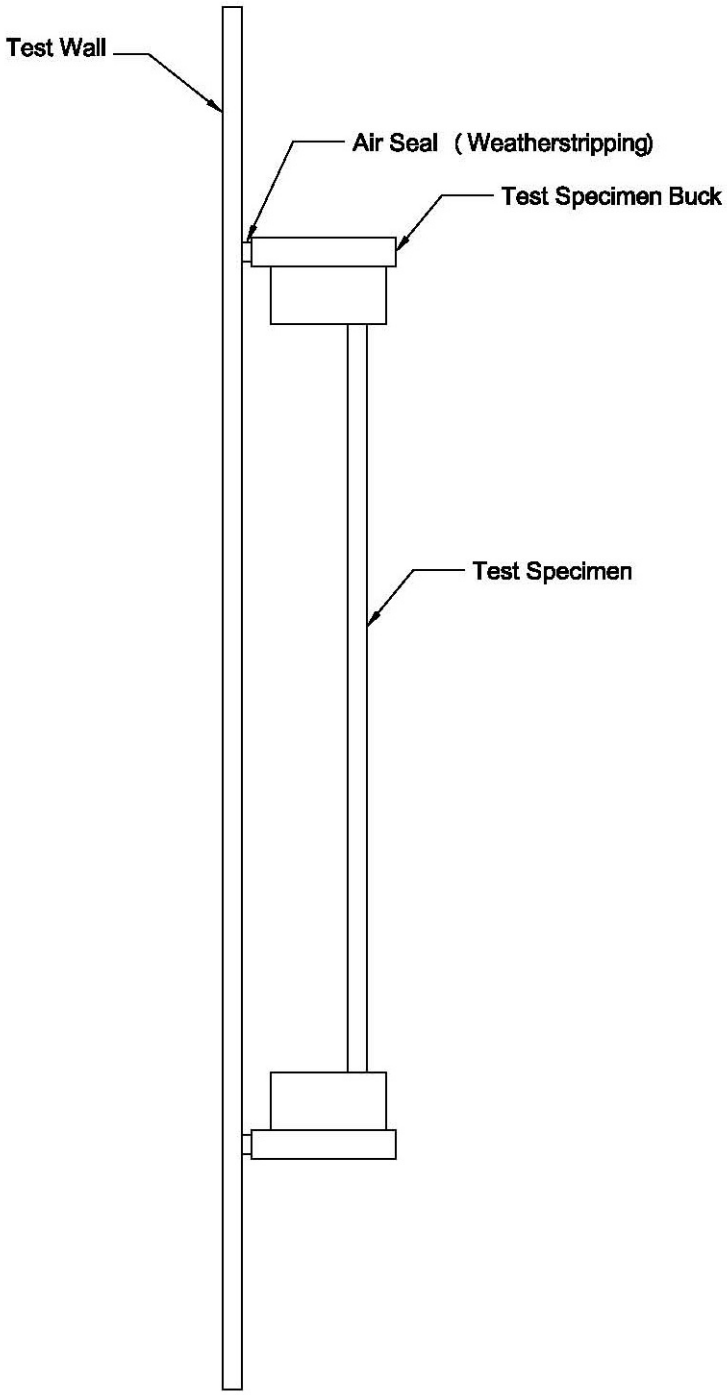
Appendix A

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.



Appendix C

Drawing(s)

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