Architectural Testing

AAMA/WDMA/CSA 101/I.S.2/A440-08
TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC.

SERIES/MODEL: 910
PRODUCT TYPE: Sliding Door (XO) (Fin)

Title	Summary of Results
Primary Product Designator	Class R-PG40 1816 x 2019 (72 x 80)-SD
Design Pressure	±2400 Pa (±50.13 psf)
Operating Force (in motion)	36 N (8 lbf)
Air Infiltration	1 L/s/m^2 (0.23 cfm/ft^2)
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)
Uniform Load Structural Test Pressure	±3600 Pa (±75.19 psf)
Forced Entry Resistance	Grade 10

Test Completion Date: 02/25/10

Reference must be made to Report No. 98644.01-109-47, dated 04/09/10 for complete test specimen description and data.

130 Derry Court
York, PA 17406-8405
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A·L·I

(Validator / Operations Administrator)

AAMA
CERTIFICATION PROGRAM

AUTHORIZATION FOR PRODUCT CERTIFICATION

MI Windows & Doors, LLC
P.O. Box 370
Gratz, PA 17030-0370

Attn: Rick Sawdey

The product described below is hereby approved for listing in the next issue of the AAMA Certified Products Directory. The approval is based on successful completion of tests, and the reporting to the Administrator of the results of tests, accompanied by related drawings, by an AAMA Accredited Laboratory.

1. The listing below will be added to the next published AAMA Certified Products Directory.

SPECIFICATION	**RECORD OF PRODUCT TESTED**			
AAMA/WDMA/CSA 101/I.S.2/A440-08 **R-PG40-1816x2019 (72x80)-SD** Negative Design Pressure = -50 psf				
COMPANY AND CODE	**CPD NO.**	**SERIES MODEL & PRODUCT DESCRIPTION**	**MAXIMUM SIZE TESTED**	
MI Windows & Doors, LLC **Code: MTL**	**4106**	**910/3910 SGD (FIN)** **(PVC)(OX)(OG)(INS GL)** **(REINF)(ASTM)**	**FRAME** **1816 mm x 2019 mm** **(6'0" x 6'8")**	**PANEL** **927 mm x 1962 mm** **(3'1" x 6'5")**

2. This Certification will expire **February 25, 2016 (extended from February 25, 2014 per AAMA 106-13)** and requires validation until then by continued listing in the current AAMA Certified Products Directory.

3. Product Tested and Reported by: **Architectural Testing, Inc.**

   Report No.: **98644.01-109-47**

   Date of Report: **April 9, 2010**

Validated for Certification

Associated Laboratories, Inc.

Date: **December 5, 2013**

Authorized for Certification

American Architectural Manufacturers Association

Cc: AAMA
JGS
ACP-04 (Rev. 1/11)

Architectural Testing

AAMA/WDMA/CSA 101/I.S.2/A440-08 TEST REPORT

Rendered to:

MI WINDOWS AND DOORS, INC.
P.O. Box 370
650 West Market Street
Gratz, Pennsylvania 17030-0310

Report No.:	98644.01-109-47
Test Dates:	02/23/10
Through:	02/25/10
Report Date:	04/09/10
Test Record Retention Date:	02/25/14

Project Summary: Architectural Testing, Inc. was contracted by MI Windows and Doors, Inc. to witness and validate testing on a Series/Model 910, sliding door (XO) (fin) at the MI Windows and Doors, Inc. test facility in Gratz, Pennsylvania. The sample tested successfully met the performance requirements for a Class R-PG40 1816 x 2019 (72 x 80)-SD 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/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights.*

Test Specimen Description:

Series/Model: 910

Product Type: Sliding Door (XO) (Fin)

Overall Size: 1816 mm (71-1/2") wide by 2019 mm (79-1/2") high

Panel Size: 927 mm (36-1/2") wide by 1962 mm (77-1/4") high

Fixed Daylight Opening Size: 813 mm (32") wide by 1838 mm (72-3/8") high

Screen Size: 937 mm (36-7/8") wide by 1978 mm (77-7/8") high

Overall Area: 3.7 m^2 (39.47 ft^2)

Finish: All vinyl was white.

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phone: 717-764-7700
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Test Specimen Description: (Continued)

Frame Construction: The frame was constructed of extruded vinyl members with mitered and welded corners. The fixed meeting stile was fastened to the head and sill with two #8 x 3" long pan head screws at each end. An extruded vinyl fixed glass adapter was snap-fit into the head and sill at the fixed lite. The interior sill track utilized an extruded aluminum roller track and a 2-1/2" long by 1-1/2" wide by 1" high rubber door stop. The head utilized two 4" long extruded vinyl filler caps located at the lock jamb and at the midspan.

Panel Construction: The panel was constructed of extruded vinyl members with mitered and welded corners.

Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.190" high polypile with center fin	1 Row	Fixed meeting stile
0.187" backed by 0.250" high polypile with center fin	1 Row	Head, sill, jambs, and interior meeting stile
Kerf-mounted 7/8" long single leaf gasket	1 Row	Exterior left screen stile

Glazing Details: The unit was glazed with 3/4" thick insulating glass constructed of two sheets of 1/8" thick clear tempered glass and a metal U-shaped spacer system. The glass was set from the exterior onto double-sided adhesive foam glazing tape and secured with snap-in vinyl glazing beads.

Drainage:

Description	Quantity	Location
1/2" wide by 1/8" high weepslot	2	Midspan of the aluminum roller track
1/2" wide by 3/16" high weepslot	2 per corner	Each interior corner draining the interior track to the interior hollow
3/8" wide by 1/8" high weepslot	4	Each end of head and sill draining the screen track to the hollow below

Test Specimen Description: (Continued)

Drainage: (Continued)

Description	Quantity	Location
1/2" wide by 1/16" high weepslot	4	Head and sill, 3/4" from each end draining the fixed lite track to the hollow below
1" wide by 1/8" high weepslot	2 per corner	Head and sill, 1-1/2" from each end draining the intermediate and interior hollows
1" wide by 1/8" high weepslot	2	Sill face, 1" from each end draining the exterior hollow

Hardware:

Description	Quantity	Location
Metal door handle with lock and adjacent keeper	1	Lock stile, 39" from sill
Metal rollers	2	Operable panel, 4" from each end of bottom rail
Metal screen handle with lock and adjacent keeper	1	Lock stile, 39" from sill
Plastic rollers	2	Screen, 4-1/2" from each end of bottom screen rail

Reinforcement: The fixed and interior meeting stiles utilized a tubular steel reinforcement, (Reference Drawing #1x1 Steel Tube). The tubular steel reinforcement was secured to the fixed meeting stile with #10 x 1" long self-tapping pancake head screws located 4" from each end and the midspan. The lock stile of the operable panel utilized a U-shaped steel reinforcement, (Reference Drawing #910-995 RF STL Liner).

Screen Construction: The screen was constructed of roll-formed aluminum members. Corners were mitered and secured with plastic corner keys. The screen mesh was secured with a flexible vinyl spline.

Test Specimen Description: (Continued)

Installation: The unit was installed into a Spruce-Pine-Fir wood buck. The nail fin was set against a bed of silicone and fastened with #6 x 1-5/8" long drywall screws, located 3" from each end and spaced 8" on center.

Test Results: The temperature during testing was 22°C (71°F). The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	67 N (15 lbf)	135 N (30 lbf)
	Maintain motion	36 N (8 lbf)	90 N (20 lbf)
	Locks	13 N (3 lbf)	100 N (23 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	75 Pa (1.6 psf)	1 L/s/m^2 (0.23 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.

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.

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

Note #2: The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".

5.3.5	Forced Entry Resistance per ASTM F 842		
	Type: A	Grade: 10	
	Disassembly Test	No entry	No entry
	Test A1 through A6	No entry	No entry
	Sash/Panel Manipulation Test	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed
5.3.6.2	Thermoplastic Corner Weld Test	Meets as stated	Meets as stated
5.3.6.3	Deglazing Test In operating direction - 320 N (70 lbf)		
	Left stile	2.8 mm (0.11")	11.4 mm (0.45")
	Right stile	2.8 mm (0.11")	11.4 mm (0.45")
	In remaining direction - 230 N (50 lbf)		
	Top rail	3.0 mm (0.12")	11.4 mm (0.45")
	Bottom rail	2.8 mm (0.11")	11.4 mm (0.45")
Optional Performance			
4.3.2.1	Water Penetration Resistance per ASTM E 547 (with and without insect screen) 290 Pa (6.06 psf)	No leakage	No leakage
4.3.2.1	Uniform Load Deflection per ASTM E 330 (Deflections were taken on the fixed meeting stile) (Loads were held for 10 seconds)		
	2400 Pa (50.13 psf) (positive)	54.1 mm (2.13")	See Note #3
	2400 Pa (50.13 psf) (negative)	51.1 mm (2.01")	See Note #3

***Note #3**: 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.*

4.3.2.1	Uniform Load Structural per ASTM E 330 (Permanent sets were taken on the fixed meeting stile) (Loads were held for 10 seconds)		
	3600 Pa (75.19 psf) (positive)	7.6 mm (0.30")	7.9 mm (0.31") max.
	3600 Pa (75.19 psf) (negative)	4.6 mm (0.18")	7.9 mm (0.31") max.

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 and are representative of the test specimen reported herein.

List of Official Observers:

Name	Company
Rick Sawdey	MI Windows and Doors, Inc.
Russell W. Clark	Architectural Testing, Inc.

Per the client, this product is also labeled under the following name:

3910

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. If test specimen contains glazing, 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.

Digitally Signed by: Russell Clark

Russell W. Clark
Technician

Digitally Signed by: Michael D. Stremmel

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

RWC:dem

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Alteration Addendum (1)
Appendix-B: Test Equipment (1)
Appendix-C: Complete drawings packet on file with Architectural Testing, Inc.

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	04/09/10	N/A	Original report issue

Appendix A

Alteration Addendum

Alteration #1: Date-02/23/10
Cause for alteration - excessive air leakage during air infiltration
Remedial action taken - adjusted lock

Alteration #2: Date-02/24/10
Cause for alteration - fixed panel deglazed during loads
Remedial action taken - reglazed fixed panel

Appendix B

Test Equipment

Instrument	Manufacturer	Asset #
Control Panel	Architectural Testing, Inc.	MI-1
Linear Transducer	Celesco	J1705016A
Linear Transducer	Celesco	J1705015A
Linear Transducer	Celesco	E1603001A
Force Gauge	Chatillon	E33653
Force Gauge	Viking	FG-1
Force Gauge	Viking	FG-2
Deglazing Tool	Architectural Testing, Inc.	#126

Appendix C

Drawings

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