



TEST REPORT

Report No.: F6799.01-109-47

Rendered to:

MI WINDOWS AND DOORS, LLC
Gratz, Pennsylvania

PRODUCT TYPE: Horizontal Sliding Window (XO Fin Slider)
SERIES/MODEL: HM 160

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
AAMA/WDMA/CSA 101/I.S.2/A440-08	Class LC-PG35 2134 x 1524 (84 x 60)-HS
Design Pressure	±1680 Pa (±35.09 psf)
Air Infiltration	0.9 L/s/m ² (0.17 cfm/ft ²)
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)

Test Completion Date: 03/24/16

Reference must be made to Report No. F6799.01-109-47, dated 04/15/16 for complete test specimen description and detailed test results.

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

2.0 Test Laboratory: Architectural Testing, Inc., an Intertek company ("Intertek-ATI")
130 Derry Court
York, Pennsylvania 17406-8405
717-764-7700

3.0 Project Summary:

3.1 Product Type: Horizontal Sliding Window (XO Fin Slider)

3.2 Series/Model: HM 160

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 a **Class LC-PG35 2134 x 1524 (84 x 60)-HS** rating.

3.4 Test Dates: 03/21/16 - 03/24/16

3.5 Test Record Retention End Date: All test records for this report will be retained until March 24, 2020.

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

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

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

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Richie Williard	MI Windows and Doors, LLC
Joel Chronister	Intertek-ATI

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:

Overall Area: 3.3 m ² (35.0 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	2134	84	1524	60
Interior sash	1070	42-1/8	1454	57-1/4
Screen	1022	40-1/4	1445	56-7/8

5.2 Frame Construction:

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

	Joinery Type	Detail
All corners	Mitered and welded	Thermally welded

5.3 Sash Construction:

Sash Member	Material	Description
Stiles and rails	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered and welded	Thermally welded

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
0.187" backed by 3/8" wrapped hollow foam bulb	1 row	Fixed meeting stile
0.187" backed by 0.450" high polypile	1 row	Interior sash meeting stile
0.187" backed by 0.290" high polypile with center fin	1 row	All members of frame, interior sash rails and sash stile

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	U-shaped, butyl-coated metal	1/8" annealed	1/8" annealed	Exterior glazed onto a double-faced glazing tape and secured in place with a snap-in PVC glazing

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Sash daylight openings	1	981 x 1416	38-5/8 x 55-3/4	1/2"
Fixed daylight opening	1	981 x 1416	38-5/8 x 55-3/4	1/2"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with cover	1-5/8" wide by 1/4" high	4	3-1/2" from the jambs and 1/2" from the sill, 38-1/2" from the jambs and 1/2" from the sill
Weepslot	1" wide by 1/4" high	4	3" from the jambs and 35-1/2" from the jambs in the sash track
Weep hole	1/4" wide by 1/4" high	1	5-1/4" from the jamb in the sill
Weepslot	1/2" wide by 1/16" high	2	1/2" from the stiles on the bottom rail

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Metal lock	1	40-3/4" from the jambs and 30" from the sill

5.8 Reinforcement:

Drawing Number	Location	Material
M-9264	Interior sash meeting rail	Extruded aluminum

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Extruded aluminum	Mitered and keyed	Fiberglass	Rolled into the pocket and fastened using a ridged vinyl spline

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the window was sealed with sealant.

Location	Anchor Description	Anchor Location
Head, sill and jambs	#6 x 1-5/8" long drywall screws	Located 3" from the corners and spaced 8" to 10" on center through the mounting fin and into the wood buck

7.0 Test Results: The temperature during testing was 19°C (67°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 49 N (11 lbf) Maintain motion: 45 N (10 lbf) Locks: 9 N (2 lbf)	Report only 115 N (25 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.9 L/s/m ² (0.17 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)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 290 Pa (6.06 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting rail +1680 Pa (+35.09 psf) -1680 Pa (-35.09 psf)	25.9 mm (1.02") 21.1 mm (0.83")	Report only	4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting rail +2520 Pa (+52.63 psf) -2520 Pa (-52.63 psf)	3.0 mm (0.12") 3.0 mm (0.12")	5.6 mm (0.22") max. 5.6 mm (0.22") 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: 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 used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Intertek-ATI 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 Intertek-ATI 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 Intertek-ATI.

For ARCHITECTUAL TESTING, INC.

Joel Chronister
Technician

Timothy J. McGill
Manager - Product Testing

JC:asm/cmd

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 Intertek-ATI.

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
1	06/02/16	Page 1, 2	Removed <i>Reference Intertek-ATI Report No. C5421.01-301-44, dated 02/28/13 for complete Gateway test specimen description and test results.</i>
		Page 6	Added new FER test results
		Page 7	Removed note 7 from test results

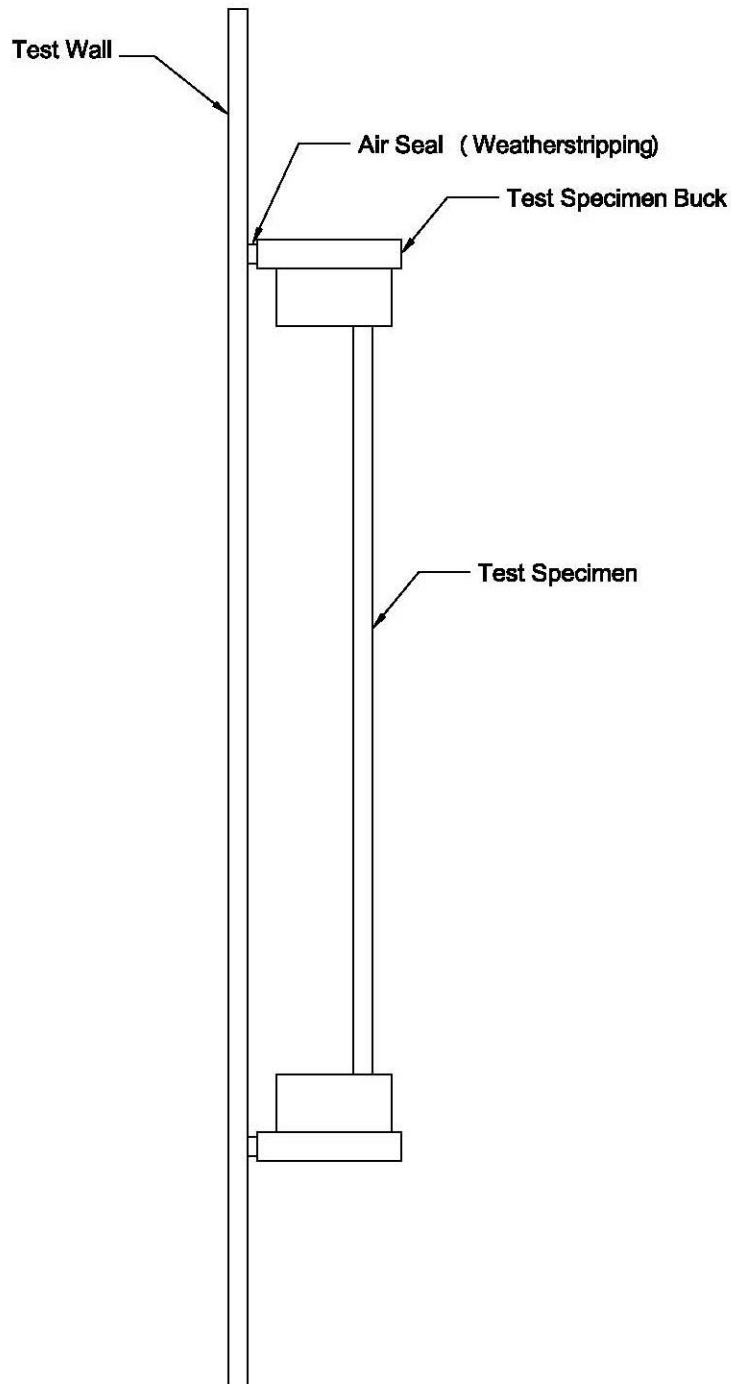
Appendix A

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 Intertek-ATI.