TEST REPORT

Report No.: H0451.01-109-47

Rendered to:

MI WINDOWS AND DOORS, LLC
Gratz, Pennsylvania

PRODUCT TYPE: Polyvinyl Chloride (PVC) Horizontal Sliding Window
SERIES/MODEL: 1630

SPECIFICATION(S): AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

	Summary of Results	
Title	**Test Specimen #1 (Fin)**	**Test Specimen #2 (Finless)**
AAMA/WDMA/CSA 101/I.S.2/A440-11	Class LC-PG30 1829 x 1829 (72 x 72)-HS	Class LC-PG30 1829 x 1829 (72 x 72)-HS
Design Pressure	±1440 Pa (±30.08 psf)	±1440 Pa (±30.08 psf)
Air Infiltration	0.4 L/s/m^2 (0.07 cfm/ft^2)	N/A
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)	N/A

Test Completion Date: 04/25/17

Reference must be made to Report No. H0451.01-109-47, dated 06/12/17 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: Polyvinyl Chloride (PVC) Horizontal Sliding Window

3.2 Series/Model: 1630

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 (Fin)	101/I.S.2/A440-11	Class LC-PG30 1829 x 1829 (72 x 72)-HS
2 (Finless)	101/I.S.2/A440-11	Class LC-PG30 1829 x 1829 (72 x 72)-HS

3.4 Test Date(s): 04/24/17 - 04/25/17

3.5 Test Record Retention End Date: All test records for this report will be retained until April 25, 2021.

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 205-15 "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 Intertek-ATI for a minimum of two 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.

3.0 Project Summary: (Continued)

3.9 List of Official Observers:

Name	Company
Richie Williard	MI Windows and Doors, LLC
Andrew P. Mehalick	Intertek-ATI

4.0 Test Specification(s):

AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - 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: 3.3 m² (36.0 ft²)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	1829	72	1829	72
Sash size	908	35-3/4	1753	69
Screen	854	33-5/8	1737	68-3/8

The following descriptions apply to all specimens.

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, jambs, fixed meeting stile	PVC	Extruded
Screen retainers	Aluminum	Extruded

5.0 Test Specimen Description: (Continued)

5.2 Frame Construction: (Continued)

	Joinery Type	Detail
Head, sill, and jambs	Mitered	Thermally welded
Screen retainers	Mitered	Pressed onto the head, sill, and jambs. The corners were not secured.
Fixed meeting stile	Coped and butted	Secured to the head and sill using #8 x 2-1/2" pan head screws through the head and sill and into the meeting stile screw bosses
Roller track	Aluminum	Extruded

5.3 Sash Construction:

Sash Member	Material	Description
Rails and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.4 Reinforcement:

Drawing Number	Location	Material
M-2115	Lock stile	Aluminum
AE-000162	Fixed meeting stile	Aluminum

5.5 Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.210" high polypile with fin	1 row	Screen retainers
0.187" backed by 0.210" high polypile with fin	1 row	Head, sill, and jambs sash pocket, the fixed meeting rail interlock face, and behind the interlock
0.187" backed by 0.250" high polypile with fin	2 rows	Top and bottom rail of the sash
0.187" backed by 0.250" high polypile with fin	1 row	Lock stile behind the interlock

5.0 Test Specimen Description: (Continued)

5.6 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" clear annealed	1/8" clear annealed	Exterior glazed against a bead of silicone and held in place using snap-in glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Operable sash daylight opening	1	816 x 1661	32-1/8 x 65-3/8	1/2"
Fixed daylight opening	1	816 x 1708	32-1/8 x 67-1/4	1/2"

5.7 Drainage:

Drainage Method	Size	Quantity	Location
Weephole	3/16" diameter	2	Bottom rail glazing pocket, 3-1/8" from each corner
Weephole	3/16" diameter	2	Bottom of bottom rail, 3-1/8" from each corner
Weepslot	5/16"wide by 5/8" long	2	Corner of the jamb and sill, draining the sash pocket into the intermediate sill hollow
Weepslot	5/16"wide by 5/8" long	2	Corner of the jamb and sill, draining the intermediate sill hollow and into the exterior sill hollow
Weepslot with cover	5/16" wide by 1-1/2" long	2	Located 3" from the jamb in the exterior face of the sill, draining the exterior hollow

5.8 Hardware:

Description	Quantity	Location
Sash rollers	2	Bottom rail 1-1/2" from the corner of the stiles
Metal lock with keepers	2	Lock stile, 14" from the bottom and top rails

5.0 Test Specimen Description: (Continued)

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Aluminum	Keyed and butted	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 silicone.

Test Specimen #1:

Location	Anchor Description	Anchor Location
Head, sill, and jambs	#6 x 1-5/8" flat head screws	Located 3" from the corners and spaced 12" on center through the mounting fin and into the wood buck

Test Specimen #2:

Location	Anchor Description	Anchor Location
Head and jambs	#8 x 1-1/2" pan head screws	Located 4" from the corners, and spaced 12-1/2" on center through the head and jambs and into the wood buck

7.0 Test Results: The temperature during testing was 22°C (72°F). The results are tabulated as follows:

Test Specimen #1:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 98 N (22 lbf) Maintain motion: 44 N (10 lbf) Locks: 13 N (3 lbf)	Report only 115 N (25.85 lbf) max. 100 N (22.48 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.4 L/s/m^2 (0.07 cfm/ft^2)	1.5 L/s/m^2 (0.3 cfm/ft^2) max.	1, 2
Water Penetration, per ASTM E 547	N/A	N/A	4
Uniform Load Deflection, per ASTM E 330	N/A	N/A	4
Uniform Load Structural, per ASTM E 330	N/A	N/A	4
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 360 Pa (7.52 psf)	Pass	No leakage	3
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting stile +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	 58.7 mm (2.31") 51.3 mm (2.02")	 Report only	 5, 6, 7
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting stile +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	 2.5 mm (0.10") 3.8 mm (0.15")	 6.9 mm (0.27") max. 6.9 mm (0.27") max.	 6, 7

Test Specimen #2:

Title of Test	Results	Allowed	Note
Optional Performance			
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting stile +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	 55.1 mm (2.17") 53.6 mm (2.11")	 Report only	 5, 6, 7
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting stile +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	 2.0 mm (0.08") 3.0 mm (0.12")	 6.9 mm (0.27") max. 6.9 mm (0.27") max.	 6, 7

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: Test Date 04/24/17 / Time: 10:00 AM

Note 3: With and without insect screen.

Note 4: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 5: 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 6: Loads were held for 10 seconds.

Note 7: 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 ARCHITECTURAL TESTING, Inc.

Digitally Signed by: Andrew Mehalick

Andrew P. Mehalick
Technician

Digitally Signed by: Timothy J. McGill

Timothy J. McGill
Manager – Product Testing

APM: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: Drawing(s) (0) Complete drawings packet on file with Intertek-ATI.

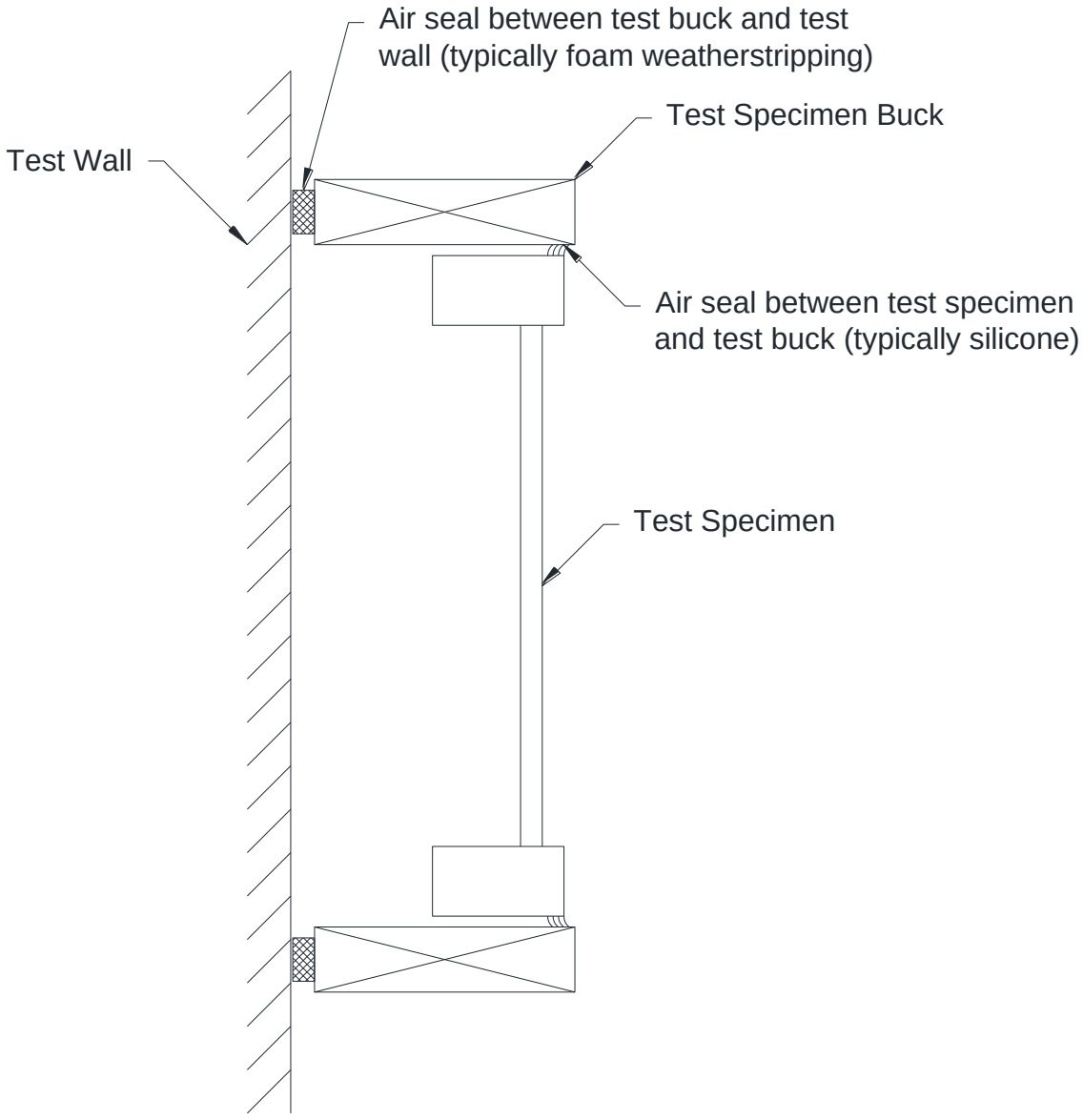
Appendix A

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.*