

TEST REPORT

AAMA/WDMA/CSA 101/I.S.2/A440-11

REPORT NO.: 1405.05-106-11

RENDERED TO: MI WINDOWS AND DOORS
 Gratz, Pennsylvania

PRODUCT TYPE: PVC (Polyvinyl Chloride) Horizontal Sliding Window (XO)

SERIES / MODEL: 1630

Test	Specimen #1 Summary of Results
Primary Product Designator	Class LC – PG50 1880 x 1270 (74 x 50)-HS
Design Pressure	±2400 Pa (±50.13 psf)
Air Infiltration	0.6 L/s/m ² (0.12 cfm/ft ²)
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

Test	Specimen #2 Summary of Results
Primary Product Designator	Class LC – PG50 1880 x 1270 (74 x 50)-HS
Design Pressure	±2400 Pa (±50.13 psf)
Air Infiltration	N/A
Water Penetration Resistance Test Pressure	N/A

Test Completion Date: 5/2/2018

Reference must be made to Report No. 1405.05-106-11, dated 5/9/2018 for complete test specimen description and detailed test results.

CLIENT INFORMATION: MI WINDOWS AND DOORS
702 West Market Street
Gratz, Pennsylvania 17030

TEST LABORATORY: Molimo, LLC
1410 Eden Road
York, Pennsylvania 17402
717-900-6034

PROJECT SUMMARY:

PRODUCT TYPE: PVC (Polyvinyl Chloride) Horizontal Sliding Window (XO)

SERIES/MODEL: 1630

PROJECT SUMMARY:

Molimo, LLC was contracted to perform testing on the above referenced product. The results are tested values and were secured by using the designated test method. A summary of the rating achieved for the specimens tested are shown in the table below.

SPECIMEN	SPECIFICATION	PRODUCT RATING
1	101/I.S.2/A440-11	Class LC – PG50 1880 x 1270 (74 x 50)-HS
2	101/I.S.2/A440-11	Class LC – PG50 1880 x 1270 (74 x 50)-HS

PROJECT DETAILS:

Test Dates: 12/1/2017 and 5/2/2018

Test Record Retention End Date: 5/2/2022

Test Location: MI Windows and Doors test facility in Gratz, Pennsylvania. In accordance with AAMA 205.01, calibration of manufacturers' test equipment is documented under Report No. 1405.01-106-11.

Test Specimen Source: The test specimens were provided by the client. Representative samples of the test specimens will be retained by Molimo for a minimum of four years from the test completion date.

Drawing Reference: The test specimen drawings were supplied by the client. The test specimen construction was verified by Molimo and was found to be representative of the product tested. The complete drawing packet of test specimen drawings are on file with Molimo, LLC.

WITNESSES:

The following representatives witnessed all or part of the testing.

Name	Company
Richie Williard	MI Windows and Doors
Michael D. Stremmel, P.E.	Molimo, LLC

TEST METHOD:

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

TEST SPECIMEN DESCRIPTION:**PRODUCT SIZES:**

Test Specimens #1 & #2:

Overall Size:	1880 mm x 1270 mm (74" x 50")
Overall Area:	2.39 m ² (25.69 ft ²)
Sash:	937 mm x 1195 mm (36-7/8" x 47-1/16")
Screen Size:	878 mm x 1181 mm (34-9/16" x 46-1/2")

FRAME CONSTRUCTION:

Material:	Extruded PVC
Corner Details:	Mitered and thermally welded
Other Details:	The fixed meeting stile was coped and butted, secured with two #8 x 2-1/2" pan head screws at each end. A snap-in, extruded aluminum roller track was utilized in the interior sill track. The head, sill, and jamb at the sash area utilized an extruded aluminum frame adaptor, snap-fit to the PVC frame.

SASH CONSTRUCTION:

Material:	Extruded PVC
Corner Details:	Mitered and thermally welded

TEST SPECIMEN DESCRIPTION: (Continued)

REINFORCEMENT:

Drawing Number	Material	Location
M2343	Aluminum	Fixed meeting stile
M2115	Aluminum	Sash meeting stile

GLAZING DETAILS: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimens can be made.*

Glass Type: 3/4" IG

Glazing Construction: (exterior to interior)

1/8" thick annealed glass

1/2" corrugated plastic reinforced butyl spacer system

1/8" thick annealed glass

Glazing Method: Set from the exterior glazed against a bed of silicone and secured with PVC snap-in glazing beads.

Glazing Bite: 1/2"

Daylight Opening:

Sash: 846 mm x 1105 mm (33-5/16" x 43-1/2")

Fixed daylight opening: 846 mm x 1153 mm (33-5/16" x 45-3/8")

WEATHERSTRIPPING:

Description	Quantity	Location
0.220" high polypile with centerfin	2 Rows	Head, sill and jamb at the frame adaptor and interior leg
0.220" high polypile with centerfin	1 Row	Sash meeting stile
0.220" high polypile with centerfin	2 Rows	Fixed meeting stile and sash top and bottom rails
0.350" high polypile pad (1" by 1/2")	2	Each end of the sash meeting stile

TEST SPECIMEN DESCRIPTION: (Continued)**DRAINAGE:**

Description	Quantity	Location
3/4" wide x 1/4" high weepslot	2	Sill, one at each end, draining the interior sill track to the exterior hollow
1-1/4" wide x 1/4" high weepslot with cover	2	Sill face, 4" from each end
3/16" diameter weephole	2	Sash bottom rail, 3" from each end

HARDWARE:

Description	Quantity	Location
Metal cam locks	2	Fixed meeting stile, 14" from each end
Plastic roller assemblies	2	Sash bottom rail, 2" from each end

SCREEN CONSTRUCTION:

Frame Material: Extruded aluminum
Mesh Type: Fiberglass mesh
Corner Construction: Plastic corner key
Mesh Attachment Method: Flexible vinyl spline

TEST SPECIMEN DESCRIPTION: (Continued)

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 specimen was sealed with sealant.

TEST SPECIMEN #1:

Location	Anchor Description	Anchor Spacing
Head, sill and jambs	#6 x 1-1/2" flat head screws	3" from each corner and spaced 12" on center, through the mounting fin into the wood buck

TEST SPECIMEN #2:

Location	Anchor Description	Anchor Spacing
Head	#8 x 2" pan head screws	4" from each corner and spaced 16-1/2" on center, through the frame into the wood buck
Jambs	#8 x 2" pan head screws	4" from each corner and spaced 14" on center, through the frame into the wood buck
Sill	3-1/4" x 8" x 0.080" thick aluminum plate, secured to the sill with two #8 x 1/2" pan head screws and secured to the wood buck with two #8 x 1-1/4" pan head screws	Midspan of the sill

TEST RESULTS: The temperature during testing was 19°C (66°F).

SPECIMEN #1:

OPERATING FORCE: (per ASTM E 2068)

Test	Results	Allowable
Initiate Motion	102 N (23 lbf)	Report Only
Maintain Motion (Opening)	67 N (15 lbf)	90 N (20 lbf)
Maintain Motion (Closing)	53 N (12 lbf)	90 N (20 lbf)
Locks / Latches	18 N (4 lbf)	100 N (22.5 lbf)

Note 1: The operating force results listed above represent the maximum force measured among all sash tested.

AIR LEAKAGE TESTING: (per ASTM E 283)

Test	Results	Allowable
Infiltration @ 75 Pa (1.57 psf)	0.6 L/s/m ² (0.12 cfm/ft ²)	1.5 L/s/m ² (0.30 cfm/ft ²)

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

WATER PENETRATION TESTING: (per ASTM E 547)

Test	Results	Allowable
360 Pa (7.52 psf)	Pass	No Leakage

Note 3: Water Penetration testing was performed with and without an insect screen.

TEST RESULTS: (Continued)

SPECIMEN #1:
UNIFORM LOAD TESTING: (per ASTM E 330)

Design Pressure Test	Results	Allowable
Deflection measured at the fixed meeting stile +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	34.3 mm (1.35") 26.9 mm (1.06 ")	Report Only

Structural Test	Results	Allowable
Permanent Set measured at the fixed meeting stile +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	3.6 mm (0.14") 1.0 mm (0.04")	4.8 mm (0.19") 4.8 mm (0.19")

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation and is recorded for information purposes only.

Note 5: All loads were held for 10 seconds.

Note 6: Tape and film were used to seal against air leakage. In our opinion, the tape and film did not influence the results of the test.

SECONDARY TESTING:

Test	Results	Allowable
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

TEST RESULTS: (Continued)

SPECIMEN #2:
UNIFORM LOAD TESTING: (per ASTM E 330)

Design Pressure Test	Results	Allowable
Deflection measured at the fixed meeting stile +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	28.2 mm (1.11") 25.1 mm (0.99 ")	Report Only

Structural Test	Results	Allowable
Permanent Set measured at the fixed meeting stile +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	3.3 mm (0.13") 3.3 mm (0.13")	4.8 mm (0.19") 4.8 mm (0.19")

Note 7: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation and is recorded for information purposes only.

Note 8: All loads were held for 10 seconds.

Note 9: Tape and film were used to seal against air leakage. In our opinion, the tape and film did not influence the results of the test.

General Note: All testing was performed in accordance with reference test methods.

A copy of this report, detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Molimo, LLC for the entire test record retention period. At the end of this retention period, the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. This test 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 permission of Molimo, LLC.

For MOLIMO, LLC:

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

Lance Cunningham
Manager – Operations / Sales

MDS:jld

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Air Seal Location (1)

Appendix-C: Photograph (1)

Appendix-D: Drawings (Complete drawings packet on file with Molimo, LLC)

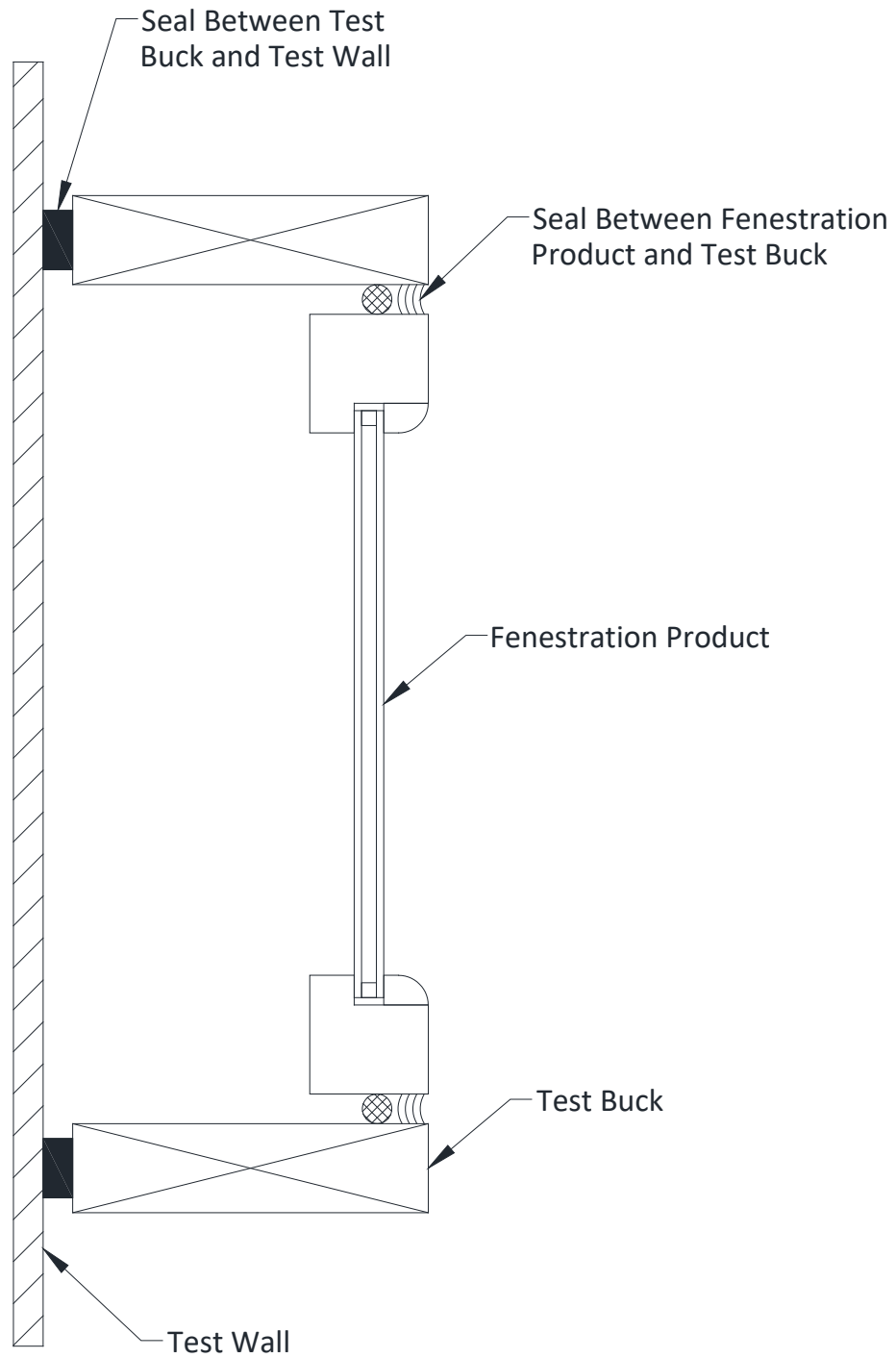
Appendix A

Alteration Addendum

No alterations were performed.

Appendix B

Air Seal Location



Appendix C

Photograph



Photo 1
Series 1630 Horizontal Sliding Window (fin installation)

Appendix D

Drawings

Complete drawing packet is on file with Molimo, LLC.