

TEST REPORT

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

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

REPORT No.: 1198.01-106-11

RENDERED TO: MI WINDOWS AND DOORS
Gratz, Pennsylvania

PRODUCT TYPE: Aluminum Sliding Glass Door (OXO)

SERIES / MODEL: 120

Test	Summary of Results
Primary Product Designator	Class LC – PG55 3678 x 2438* (145 x 96*)-SD
Design Pressure	±2640 Pa (±55.13 psf)
Air Infiltration	0.27 cfm/ft ²
Water Penetration Resistance Test Pressure – Standard Sill	2.92 psf
Water Penetration Resistance Test Pressure – 2-5/8" Sill	8.36 psf
Water Penetration Resistance Test Pressure – 3-1/2" Sill	9.82 psf

Test Completion Date: 12/19/2016

Reference must be made to Report No. 1198.01-106-11, dated 5/1/2017 for complete test specimen description and detailed test results. Reference Report No. 1223.02-106-12, dated 5/1/2017 for complete *Gateway* test specimen description and results.

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

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

PROJECT SUMMARY:

PRODUCT TYPE: Aluminum Sliding Glass Door (OXO)

SERIES/MODEL: 120

This product also labeled under the following names: 130 and 140

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 methods. A summary of the rating achieved for the specimen tested is shown in the table below.

SPECIMEN	SPECIFICATION	PRODUCT RATING
1	101/I.S.2/A440-08 and -11	Class LC – PG55 3678 x 2438* (145 x 96*)-SD

General Note: An asterisk (*) next to the size designation indicates that the unit tested for optional performance was not the Gateway test unit for the product.

PROJECT DETAILS:

Test Date: 12/19/2016

Test Record Retention End Date: 12/19/2020

Test Location: Molimo, LLC test facility in York, Pennsylvania.

Test Specimen Source: The test specimen was provided by the client. Representative samples of the test specimen 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 is on file with Molimo, LLC.

WITNESSES:

The following representatives witnessed all or part of the testing.

Name	Company
Rick Sawdey	MI Windows and Doors
Richie Williard	MI Windows and Doors
Tony Collins	MI Windows and Doors
Michael D. Stremmel, P.E.	Molimo, LLC
Aaron M. Shultz	Molimo, LLC

TEST METHODS:

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

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

TEST SPECIMEN DESCRIPTION:**PRODUCT SIZES:**

Test Specimen:

Overall Size: 3678 mm x 2438 mm (144-7/8" x 96")

Overall Area: 8.97 m² (96.58 ft²)

Operable Panel Size (2): 1235 mm x 2375 mm (48-5/8" x 93-1/2")

Fixed Panel Size (1): 1232 mm x 2375 mm (48-1/2" x 93-1/2")

FRAME CONSTRUCTION:

Material: Extruded aluminum

Corner Details: Coped and butted, sealed with sealant and secured with #8 x 3/4" pan head screws, 2 per head/jamb corner and 3 per sill/jamb corner

Other Details: The head, sill, and jambs utilized snap-on aluminum covers at the panel tracks. A 3-1/2" tall sill extender was sealed to the sill with silicone.

TEST SPECIMEN DESCRIPTION: (Continued)

PANEL CONSTRUCTION:

- Material: Extruded aluminum
- Corner Details: Coped and butted, secured with one #10 x 1" hex head screw per corner
- Other Details: An extruded aluminum meeting stile adaptor was secured to the primary interior panel with #8 x 7/8" screws, spaced 20" on center. The panel interlocks utilized an extruded aluminum adaptor, secured with #8 x 7/8" screws, spaced 20" on center. Extruded aluminum interlocks were snap-fit to the aluminum adaptor. The fixed panel was fixed to the jamb using aluminum clips located 10" from each end. Each clip was secured to the jamb with two #8 x 7/8" screws and secured to the panel with two #8 x 7/8" screws. The dead panel was fixed to the jamb using aluminum clips located 10" from each end. Each clip was secured to the jamb with two #8 x 7/8" screws and secured to the panel with two #8 x 7/8" screws. An extruded aluminum astragal was secured to the dead panel with #10 x 1-1/2" screws, spaced 20" on center.

REINFORCEMENT: No reinforcement was utilized.

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

- Glass Type: 1-1/16" IG
- Glazing Construction: (exterior to interior)
- 3/16" thick tempered glass
 - 13/32" Stainless Steel box spacer
 - 3/16" thick annealed glass
 - 0.100" HP PVB interlayer
 - 3/16" thick annealed glass
- Glazing Method: Exterior glazed against a bead of silicone and secured with snap-in aluminum glazing beads.
- Glazing Bite: 3/4"
- Daylight Opening:
- Panel (3): 1032 mm x 2172 mm (40-5/8" x 85-1/2")

TEST SPECIMEN DESCRIPTION: (Continued)
WEATHERSTRIPPING:

Description	Quantity	Location
0.250" high polypile with centerfin	2 Rows	Panel top and bottom rails and jamb stile
0.250" high polypile with centerfin	1 Row	Interlocks
0.160" high polypile with centerfin	1 Row	Glazing beads
0.230" diameter hollow vinyl bulb	1 Row	Interlocks
3" by 1-1/4", 0.750" high polypile pad	2	Midspan of the exterior track at the exterior panel meeting stile

DRAINAGE:

Description	Quantity	Location
1/4" wide by 1/8" high weepslot	8 pairs	Interior track, pairs spaced 1-1/4" on center located 5" and 11-1/2", 35", and 44-1/2" from each end of the sill
1/2" wide by 1/4" high weepslot	10 pairs	Exterior track, pairs spaced 1-1/4" on center located 8", 15", 38", 49", and 62" from each end of the sill, through two walls

HARDWARE:

Description	Quantity	Location
Tandem roller assembly	2 per panel	Bottom rail, 8" from each end
Lock handle	1	Primary panel lock stile, 39" from the bottom rail

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 specimen was sealed with sealant.

Location	Anchor Description	Anchor Spacing
Head, sill, and jambs	1/4" x 2-1/2" hex head screws	Pairs of screws, located 6" from each corner and spaced 14" to 16" on center, through frame into the wood buck

TEST RESULTS: The temperature during testing was 16°C (60°F).

General Note: Reference Report No. 1223.02-106-12 for complete Gateway test specimen description and test results.

OPERATING FORCE: (per ASTM E 2068)

Test	Results	Allowable
Initiate Motion	49 N (11 lbf)	135 N (30 lbf)
Maintain Motion (Opening)	18 N (4 lbf)	90 N (20 lbf)
Maintain Motion (Closing)	53 N (12 lbf)	90 N (20 lbf)
Locks / Latches	13 N (3 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)	1.4 L/s/m ² (0.27 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
Standard sill 180 Pa (3.76 psf)	Pass	No Leakage
2-5/8" sill 400 Pa (8.36 psf)	Pass	No Leakage
3-1/2" sill 470 Pa (9.82 psf)	Pass	No Leakage

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

TEST RESULTS: (Continued)

UNIFORM LOAD TESTING: (per ASTM E 330)

Design Pressure Test	Results	Allowable
Deflection measured at the meeting stile +2640 Pa (+55.13 psf) -2640 Pa (-55.13 psf)	10.4 mm (0.41") 10.7 mm (0.42")	Report Only

Structural Test	Results	Allowable
Permanent Set measured at the meeting stile +3960 Pa (+82.71 psf) -3960 Pa (-82.71 psf)	0.8 mm (0.03") 1.2 mm (0.05")	9.4 mm (0.37") 9.4 mm (0.37")

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

Operation Force Test Results, Air Infiltration Test Results, Water Penetration Test Results and Secondary Test Results are referenced from Gateway Report No. 1223.02-106-12.

General Note: *All testing was performed in accordance with referenced 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

Patricia A. Gordon
CEO

MDS/PAG:wlg

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: Photographs (1)

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

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
1	5/1/17	4	Corrected spacer thickness from 11/16" to 13/32" Corrected glazing bite from 1/2" to 3/4"

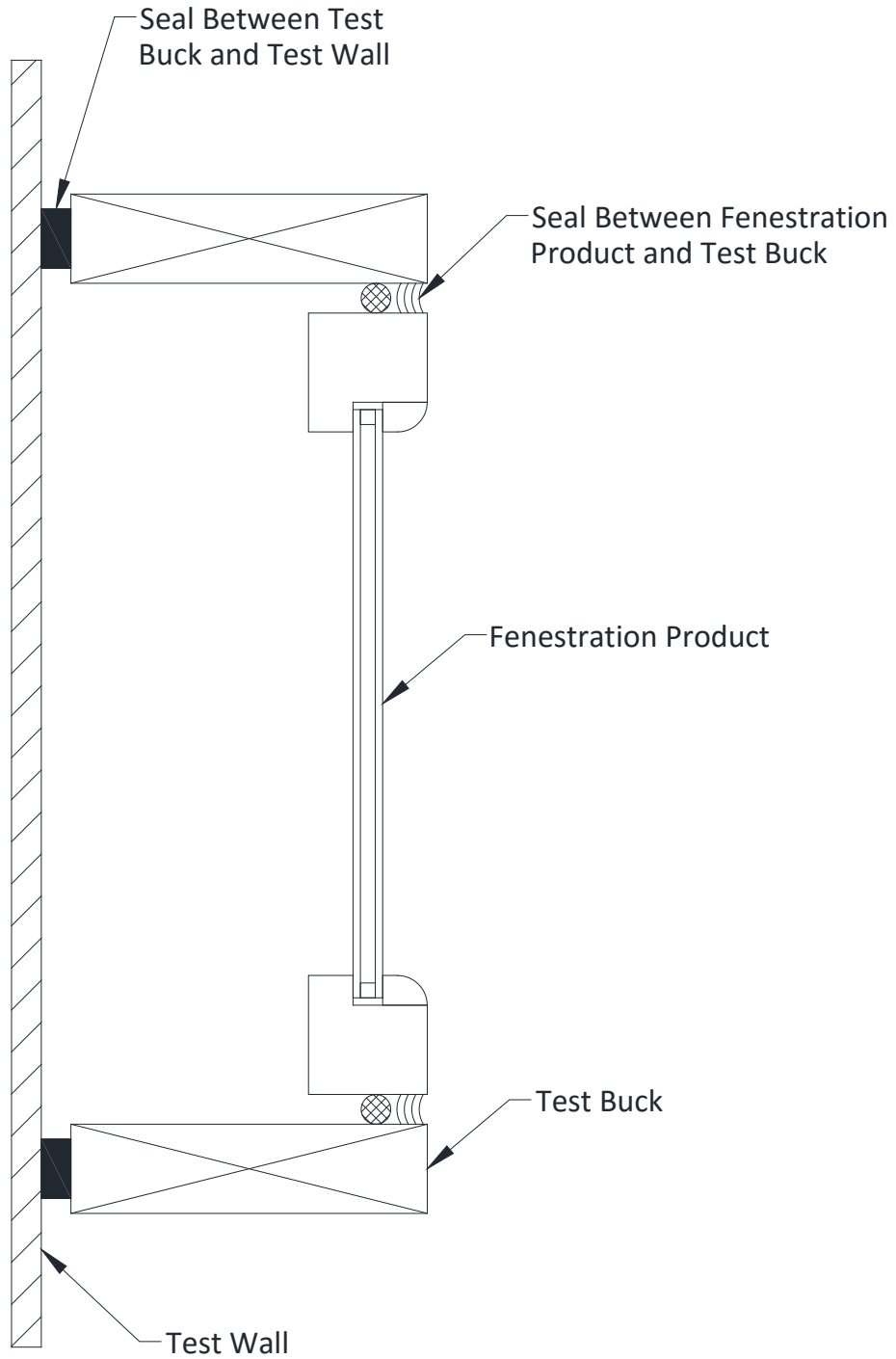
Appendix A

Alteration Addendum

No alterations were performed.

Appendix B

Air Seal Location



Appendix C

Photographs



Photo 1
Exterior view of test specimen

Appendix D

Drawings

Complete drawings packet on file with Molimo, LLC