

**TEST REPORT**

**Report No.:** B9102.01-109-47

**Rendered to:**

MI WINDOWS AND DOORS, INC.  
Gratz, Pennsylvania

**PRODUCT TYPE:** PVC Fixed Window  
**SERIES/MODEL:** 3500

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

**Test Dates:** 04/27/12  
**Through:** 04/30/12  
**Report Date:** 05/29/12  
**Test Record Retention Date:** 05/29/16

**Summary of Results**

<b>Summary of Results</b>		
<b>Title</b>	<b>Test Specimen #1</b>	<b>Test Specimen #2</b>
Primary Product Designator	Class LC-PG50 2438 x 1829 (96 x 72)-FW	Class LC-PG50 2438 x 1524* (96 x 60*)-FW
Design Pressure	+2880 Pa (+60.15 psf)	±2880 Pa (±60.15 psf)
Negative Design Pressure	-2640 Pa (-55.14 psf)	N/A
Air Infiltration	0.1 L/s/m <sup>2</sup> (0.03 cfm/ft <sup>2</sup> )	N/A
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)	N/A

<b>Summary of Results</b>		
<b>Title</b>	<b>Test Specimen #3</b>	<b>Test Specimen #4</b>
Primary Product Designator	Class LC-PG50 2057 x 1600* (81 x 63*)-FW	Class LC-PG50 1829 x 1524* (72 x 60*)-FW
Design Pressure	±2400 Pa (±50.13 psf)	±3600 Pa (±75.19 psf)
Air Infiltration	N/A	N/A
Water Penetration Resistance Test Pressure	N/A	N/A

**Test Completion Date:** 04/30/2012

Reference must be made to Report No. B9102.01-109-47, dated 05/29/12 for complete test specimen description and detailed test results.

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

**2.0 Test Laboratory:** Architectural Testing, Inc.  
130 Derry Court  
York, Pennsylvania 17406-8405  
717-764-7700

### 3.0 Project Summary:

**3.1 Product Type:** PVC Fixed Window

**3.2 Series/Model:** 3500

**3.2.1** This product also labeled under the following names: 3500PW, 3500T, 3500SDLITES, 3500SP, 3540PW, 3540T, 3540SDLITES, 3540SP, 3250PW, 3250T, 3250SDLITES, 3250SP, 3240PW, 3240T, 3240SDLITES, 3240SP, 3500HPPW, 3500HPT, 3500HPSDLITES, 3500HPSP, 3580WP, 3580T, 580SDLITES, 3580SP, S-3500PW, S-3500T, S-3500SDLITES, S-3500SP, S-3540PW, S-3540T, S-3540SDLITES, S-3540SP, M-3500PW, W3500PW, W-3500T, W-3540PW, W-3540T, W-3540SDLITES, W-3540SP, 1255PW, 1255SP, 1280PW, 910SP, 1255HPPW, 1255HPT, 1255HPSDLITES, and 1255HPSP.

**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 #1: **Class LC-PG50 2438 x 1829 (96 x 72)-FW**; Test Specimen #2: **Class LC-PG50 2438 x 1524\* (96 x 60\*)-FW**, Test Specimen #3: **Class LC-PG50 2057 x 1600\* (81 x 63\*)-FW**, Test Specimen #4: **Class LC-PG50 1829 x 1524\* (72 x 60\*)-FW**.

***General Note:** An asterisk (\*) next to the size designation indicates that the size tested for optional performance was smaller than the Gateway test size for the product type and class.*

**3.4 Test Dates:** 04/27/2012 - 04/30/2012

**3.5 Test Record Retention End Date:** All test records for this report will be retained until May 29, 2016.

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

### 3.0 Project Summary: (Continued)

**3.7 Test Sample Source:** The test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Architectural Testing for a minimum of four years from the report completion date.

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

### 3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Rick Sawdey	MI Windows and Doors, Inc.
Jeremy R. Bender	Architectural Testing, Inc.

### 4.0 Test Specification(s):

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

### 5.0 Test Specimen Description:

#### 5.1 Product Sizes:

##### Test Specimen #1:

Overall Area: 4.5 m <sup>2</sup> (48.0 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	2438	96	1829	72

##### Test Specimen #2:

Overall Area: 3.7 m <sup>2</sup> (40.0 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	2438	96	1524	60

##### Test Specimen #3:

Overall Area: 3.3 m <sup>2</sup> (35.4 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	2057	81	1600	63

##### Test Specimen #4:

Overall Area: 2.8 m <sup>2</sup> (30.0 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1829	72	1524	60

**5.0 Test Specimen Description:** (Continued)

*The following descriptions apply to all specimens.*

**5.2 Frame Construction:**

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

	Joinery Type	Detail
All corners	Mitered	Thermally welded

**5.3 Weatherstripping:** No weatherstripping was utilized.

**5.4 Glazing:**

**Test Specimen #1:**

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Metal reinforced butyl	1/8" clear tempered	1/8" clear tempered	Interior glazed against a bead of sealant and secured with PVC snap-in glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed daylight opening	1	2337 x 1727	92 x 68	1/2"

**Test Specimen #2:**

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Metal reinforced butyl	3/16" clear annealed	3/16" clear annealed	Interior glazed against a bead of sealant and secured with PVC snap-in glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed daylight opening	1	2337 x 1422	92 x 56	1/2"

## 5.0 Test Specimen Description: (Continued)

### 5.4 Glazing: (Continued)

#### Test Specimen #3:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Metal reinforced butyl	1/8" clear annealed	1/8" clear annealed	Interior glazed against a bead of sealant and secured with PVC snap-in glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed daylight opening	1	1959 x 1502	77-1/8 x 59-1/8	1/2"

#### Test Specimen #4:

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	Metal reinforced butyl	1/8" clear annealed	1/8" clear annealed	Interior glazed against a bead of sealant and secured with PVC snap-in glazing beads

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed daylight opening	1	1727 x 1422	68 x 56	1/2"

### 5.5 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot	1" wide by 1/8" high	2	2" from edge of sill face

**5.6 Hardware:** No hardware was utilized.

**5.7 Reinforcement:** No reinforcement was utilized.

## 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 sealant.

Location	Anchor Description	Anchor Location
Head, sill, and jambs	#6 x 1-5/8" long drywall screw	2" from corners and spaced 8-10" on center through the mounting fin into the wood buck.

**7.0 Test Results:** The temperature during testing was 21°C (69°F). The results are tabulated as follows:

### Test Specimen #1:

Title of Test	Results	Allowed	Note
<b>Air Leakage,</b> Infiltration per ASTM E 283 at 75 Pa (1.6 psf)	0.1 L/s/m <sup>2</sup> (0.03 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.	1
<b>Water Penetration,</b> per ASTM E 547	N/A	N/A	3
<b>Uniform Load Deflection,</b> per ASTM E 330	N/A	N/A	3
<b>Uniform Load Structural,</b> per ASTM E 330	N/A	N/A	3
<b>Forced Entry Resistance,</b> per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
<b>Thermoplastic Corner Weld</b>	Pass	Meets as stated	
<b>Optional Performance</b>			
<b>Water Penetration,</b> per ASTM E 547 at 360 Pa (7.52 psf)	Pass	No leakage	2
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at the meeting rail +2880 Pa (+60.15 psf) -2640 Pa (-55.14 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	Report Only	4, 5, 6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at the meeting rail +4320 Pa (+90.23 psf) -3960 Pa (-82.71 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	9.4 mm (0.37") max. 9.4 mm (0.37") max.	5, 6

**7.0 Test Results:** (Continued)

**Test Specimen #2:**

Title of Test	Results	Allowed	Note
<b>Optional Performance</b>			
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at meeting rail +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	2.8 mm (0.11") 1.0 mm (0.04")	Report Only	4, 5, 6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at meeting rail +4320 Pa (+90.23 psf) -4320 Pa (-90.23 psf)	<0.3 mm (<0.01") <0.3 mm (<0.01")	9.4 mm (0.37") max. 9.4 mm (0.37") max.	5, 6

**Test Specimen #3:**

Title of Test	Results	Allowed	Note
<b>Optional Performance</b>			
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at meeting rail +2400 Pa (+50.13 psf) -2400 Pa (-50.13 psf)	0.8 mm (0.03") <0.3 mm (<0.01")	Report Only	4, 5, 6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at meeting rail +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	<0.3 mm (<0.01") 0.3 mm (0.01")	5.6 mm (0.22") max. 5.6 mm (0.22") max.	5, 6

**Test Specimen #4**

Title of Test	Results	Allowed	Note
<b>Optional Performance</b>			
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at the meeting rail +3600 Pa (+75.19 psf) -3600 Pa (-75.19 psf)	<0.3 mm (<0.01") 2.8 mm (0.11")	Report Only	4, 5, 6
<b>Uniform Load Structural,</b> per ASTM E 330 taken at the meeting rail +5400 Pa (+112.78 psf) -5400 Pa (-112.78 psf)	<0.3 mm (<0.01") 3.8 mm (0.15")	5.6 mm (0.22") max. 5.6 mm (0.22") max.	5, 6



## 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: 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 not used to seal against air leakage during structural testing.*

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) 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.

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Jeremy R. Bender  
Technician

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

JRB:dem

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Complete drawings packet on file with Architectural Testing, Inc.

**Appendix A**  
**Alteration Addendum**

*Note: No alterations were required.*

## Appendix B

### Drawings

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