Construction Consulting Laboratory, International

Test Report

CCLI-13-215

Client

MI Windows and Doors, LLC.
1001 West Crosby Road
Carrollton, TX 75006

Product Type: Aluminum Horizontal Sliding Window
Series / Model: GA 278
Test Completion: November 1, 2013
Specification: AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standards / Specification for Windows, Doors and Skylights

Specimen	Title	Summary of Results
1	Product Designator	LC-PG30-HS 1829 x 1829 (72 x 72)
	Design Pressure	+/- 1440 Pa (30.0 psf)
	Air Infiltration	.55 L/s•m^2(.11cfm/ft^2)
	Water Penetration Resistance	216 Pa (4.5 psf)

Attachments: This report is complete only when all attachments listed are included.
Appendix A: Alteration Addendum
Appendix B: Complete drawings packet on file with the program administrator and Construction Consulting Laboratory.

1. PROJECT DATA

1.1. REPORT ISSUED

MI Windows and Doors, LLC.
1001 West Crosby Road
Carrollton, TX 75006

1.2. TEST LABORATORY

CONSTRUCTION CONSULTING LABORATORY, INTERNATIONAL
1601 Luna Road
Carrollton, Texas 75006

2. PROJECT SUMMARY

2.1. **PRODUCT TYPE: ALUMINUM HORIZONTAL SLIDING WINDOW**

2.2. **SERIES / MODEL TESTED: GA 278**
This product also labeled as: 2800

2.3. **COMPLIANCE STATEMENT:** Results obtained are tested values and were secured by using the designated test methods. The test specimen was tested in accordance with the AAMA/WDMA/CSA 101/I.S.2/A440-08, NAFS – North American Fenestration Standards / Specification for Windows, Doors and Skylights. The specimen met the performance requirements set forth in the specification.

2.4. **Test Date(s):** November 1, 2013

2.5. **Report Expiration:** All documents and samples for this report will be retained until November 1, 2017

2.6. **Test Location: MI Windows and Doors Testing Facility in** Carrollton, Texas. Calibration of test equipment was performed by Construction Consulting Laboratory in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

2.7. **Test Sample Source:** The specimens were manufactured by MI Windows and Doors, LLC. Representative samples and drawings will be retained by **CCLI** for a minimum period of four (4) years from the test completion date.

2.8. **Drawing Reference:** The specimen drawings have been reviewed by **CCLI** and are representative of the specimen installed and tested. If observed, deviations shall be listed on the appended drawings.

2.9. **Observers:**

Witnessed By	**(Representative)**
Taylor Rix	MI Windows and Doors, LLC.
Brandon Newman	Construction Consulting Laboratory, *International*

3. TEST SPECIMEN

Product Type:	Aluminum Horizontal Sliding Window
Series Model:	Series GA 278
Specification:	AAMA/WDMA/CSA 101/I.S.2/A440-08 LC-PG30-HS 1829 x 1829 (72 x 72)
Frame Size:	1829 x 1829 (6'-0" x 6'-0")
Sash Size:	926 x 1757 (3'-$^{7}/_{16}$" x 5'-9$^{3}/_{16}$")
Fixed DLO:	838 x 1705 (2'-9" x 5'-7$^{1}/_{8}$")
Sash DLO:	838 x 1705 (2'-9" x 5'-7$^{1}/_{8}$")
Configuration:	X.O

Weather Stripping: One row pile weather strip with integral plastic fin 9.65mm x 6.85 mm (0.380" x .270" backed) at the exterior face of sash top rail. One row pile weather strip 5.08mm x 4.75mm (0.200" x .187" backed) at the top exterior lateral face of sash top rail and the exterior face of the sash interlock. One row pile weather strip with integral plastic fin 5.08mm x 6.85mm (0.200" x .270" backed) at the interior face of the sash bottom rail. One row 6.35mm ($^{1}/_{4}$") diameter bulb vinyl at the lateral face of sash jamb stile. One row pile weather strip with felt fin 6.85mm x 4.75mm (0.270" x .187") at the frame jamb and the interior face of the fixed interlock. One row adhesive backed pile weather strip with integral felt fin 9.65mm x 6.85mm x 38.1mm (0.380" x .270" x 1½" long) at the interior face of the fixed interlock at the frame sill.

Weep Arrangement: Sloped sill.

Hardware: Sweep lock located 346mm (13$^{5}/_{8}$") from each end of sash interlock attached with two (2), #8 x 15.87mm ($^{5}/_{8}$") screws with extruded keeper groove at fixed interlock stile. One nylon housed tandem metallic roller per corner of operable panel attached with #6 x 19.05mm (¾") screw per housing.

Glass: Sealed insulating glass 19.05mm (¾") overall thickness: Two pieces, 3.175mm ($^{1}/_{8}$") annealed glass at the exterior with 12.7mm ($^{1}/_{2}$") airspace. Glass insulated with aluminum spacer.

Glazing: Interior glazed with back-bedding compound at exterior, full perimeter. Rigid vinyl snap-in glazing bead at interior of glass.

Sealant: Narrow Joint sealant at the frame corners with butyl pad applied to each end of thermal break. Interlock to frame sill fasteners and sill insert to frame sill fastener heads are cap sealed with narrow joint sealant. One-sided adhesive rubber pad at the fixed interlock-to-frame sill connection.

Fin Installation Features: Frame mounting fin was attached to a nominal 50.8mm x 101.6mm (2" x 4") SPF test buck with silicone sealant and #6 x 41.3mm (1$^{5}/_{8}$") screws through mounting fin spaced 152.4mm (6") from each end and approximately on 457.2 mm (18") centers, full perimeter. Nominal 50.8mm x 101.6mm (2" x 4") SPF test buck was inserted into a nominal 50.8mm x 304.8mm (2" x 12") SPF test fixture, which was installed on chamber. Frame was blocked at interior with a 50.8mm x 101.6mm (2" x 4") full perimeter.

Other Features: Frame and sash members are poured and de-bridged thermally broken. Frame corners are coped, butted, and attached with two (2) #6 x 19.05mm (¾") hex head screws per corner. Sash corners are coped, butted, and attached with #6 x 19.05mm (¾") screws, One (1) at rail to jamb stile connection through roller housing at bottom rail and nylon sash guide at top rail, two (2) at rail to interlock connections. Fixed interlock attached to head insert and frame sill with two (2) #6 x 25.4mm (1") screws per end. Aluminum insert part # 2804 with snap-in PVC thermal isolator part # ER-2824 at frame head and sill attached with #6 x 15.87mm (5/8") hex head screws spaced 63.5mm (2½") from each end of sill insert and 63.5mm (2½") from each end and mid-span of head insert. Snap-in PVC insert part #ER-2724 at fixed interlock interior of glazing leg. Snap in PVC insert Part #ER-2721 at frame fixed jamb interior side.

4. PERFORMANCE RESULTS

Paragraph No.	Title of Test	Test Method	Measured	Allowed
5.3.1.1	Operating Force			
	-Open		76N (17 lbs)	88.9N (20 lbs)
	-Close		58N (13 lbs)	88.9N (20 lbs)
5.3.1.1.3	Latching Devices		13N (2.9 lbs)	100N (22.5 lbs)
5.3.2	Air Infiltration	ASTM E 283-04		
	@ 75 Pa (1.57 psf)		.55 L/s•m^2 (.11cfm/ft^2)	1.5 L/s•m^2 (0.30 cfm/ft^2)
Air infiltration, air values were reported at the request of the manufacturer				
5.3.3	Water Resistance	ASTM E 547-00		
	@ 216 Pa (4.5 psf) with/without Screen		No Leakage	No Leakage
5.3.4.2	Uniform Load Deflection	ASTM E 330-02		
	Deflections @ lock rail			
	-Positive 1440 Pa (30 psf)		28mm (1.1")	Max Deflection
	-Negative 1440 Pa (30 psf)		28mm (1.1")	Max Deflection
	-Permanent Set		1.27mm (.05")	7.31mm (.288")
5.3.4.3	Uniform Load Structural	ASTM E 330-02		
	@ 2160 Pa (45 psf) Positive		No Damage	No Damage
	@ 2160 Pa (45 psf) Negative		No Damage	No Damage
	-Permanent Set		1.27mm (.05")	7.31mm (.288")
5.3.5	Forced Entry Resistance	ASTM F 588-97		
	Grade 10		No Entry	No Entry
	CAWM 301-90		No Entry	No Entry
5.3.6.3	Deglazing Test	ASTM E 987		
	-Jamb Stile @ 311 N (70 lbs)		Pass	100%
	-Pull Stile @ 311 N (70 lbs)		Pass	100%
	-Top Rail @ 222 N (50 lbs)		Pass	100%
	-Bottom Rail @ 222 N (50 lbs)		Pass	100%

Note: 2-mil plastic sheeting and duct tape were used to seal against air leakage for uniform loading. In our opinion the use of these materials did not influence the structural performance of this specimen.

Detailed extrusion and assembly drawings indicating measured wall thickness and corner construction are on file and were compared to the test sample submitted. These records will be retained at **CCLI** for a period of four years.

5. CONCLUSION

The above results were obtained by using the designated test methods and indicate compliance with the above specification. This report does not constitute certification of this product, which may only be granted by the program administrator.

Respectfully submitted,

CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*

BRANDON NEWMAN
TESTING MANAGER

WESLEY WILSON
LABORATORY MANAGER

An original copy of this document is on file with the Program Administrator, MI Windows and Doors, LLC, and Construction Consulting Laboratory, International.

APPENDIX A

ALTERATION ADDENDUM

NOTE: THE LIST BELOW REPORTS THE ACTIONS PERFORMED BY THE CLIENT TO ACHIEVE THE REPORTED RESULTS.

APPENDIX B

PRODUCT DRAWINGS

A COPY OF THE BELOW STAMPED DRAWINGS ARE ON FILE WITH CCLI, MI WINDOWS AND DOORS, L.L.C AND THE PROGRAM ADMINISTRATOR.

Die Drawing	Detail	Date
	BOM	4/19/03
2800	Layout	5/13/02
2801	Main Frame Head	4/16/92
2701	Jamb	4/16/92
2704	Fixed Stile	3/12/92
2803	Vent Jamb	4/16/92
2802	Sill	4/16/92
2705	Lock Stile	1/22/92
2707	Top Rail	4/16/92
2706	Jamb Stile	1/20/92
2804	Head Insert	3/10/92
2806	Bottom Rail	1/31/92
ER-2721-A	Head Vinyl	4/22/92
ER-2824-A	Sill Vinyl	5/11/92
ER-1999B	Glazing Bead	5/9/92
1086	Bulb	7/2/02

- END OF REPORT -