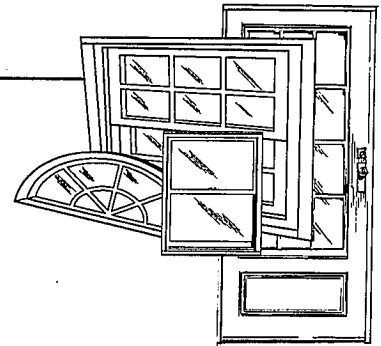


CERTIFIED TESTING LABORATORIES

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Report Number: CTLA 1212W-1
Report Date: February 10, 2004

STRUCTURAL PERFORMANCE TEST REPORT

Client: MGM Industries
287 Freehill Rd.
Hendersonville, TN 37075

Product Type and Series: SERIES 6000 VINYL FIN FRAME HORIZONTAL SLIDER WINDOW (HS-R30 69" x 48")

Test Specification: AAMA/NWWDA 101/LS.2-97 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Window and Glass Doors"

Test Specimen

Frame: The extruded vinyl fin frame measured 69" x 48" buck opening overall. Corners of frame sill and frame jambs were coped and butted corner construction and secured with two (2) #8 x 1.00" P.P.H.S.M.S. fasteners in each corner. Corners of frame head and frame jambs utilized mitered and welded corner construction. The extruded vinyl fixed meeting rail was secured to the frame jambs with four (4) #8 x 3.000" P.F.H. wood screw fasteners two (2) per each jamb.

Configuration: Single horizontal slider, fixed panel on left side, and operable vent on right side. X/O

Ventilator: One (1) active vent measured 34.500" wide x 48.000" high. One (1) fixed panel measured 35.250" wide x 48.000" high. Vent constructed from extruded vinyl with mitered and welded corner construction. Active vent day lite opening measured 30.875" wide x 42.500" high. Fixed panel had a day lite opening of 30.500" wide x 42.500" high.

Weather-stripping:

<u>Quantity</u>	<u>Description</u>	<u>Location</u>
Four (4) strips	Ultrafab woolpile w/fin .187" x .300"	Two (2) each side of exterior vent stile.
One (1) strip	Ultrafab woolpile w/fin .187" x .300"	Exterior channel of interlock rail.
One (1) strip	Foam filled/bulb vinyl w/fin .312" x .360"	Exterior of lead stile on active vent
Two (2) strips	Foam pads	One (1) each corner of sill and jamb connection.

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Hardware & Location:

<u>Quantity</u>	<u>Description</u>	<u>Location</u>
Two (2)	Brass roller w/plastic housing	Each located at bottom of vent 1.5625" c/l from each corner.
Two (2)	Metal cam locks	9.00" c/l from each vent corner top rail.
Two (2)	Metal keeper	9.00" c/l from each corner of fixed meeting rail.

Glazing: Insulated .750" overall (.125" DSB, .500" air space, .125" DSB) Exterior glazed with adhesive back bedding compound. Glazing bead is a vinyl extruded snap in type. Air space is comprised of aluminum "U" channel squiggle. Glazing rested on six (6) rubber-setting blocks that measured .775" wide x 2.00" long x .135" thick.

Sealant: A narrow joint sealant was used on all frame corners, fixed meeting rail and vent corners

Weep System: Two (2) weep notches measuring 1.125" wide x .110" high with two (2) located at exterior sill frame face and two (2) were in interior sub frame glazing leg. All weep slots were weeping to the exterior and located 2.250" c/l from each frame sill corner. Two (2) weep holes in bottom rail of vent measuring .375" wide x .125" high each located at the bottom of the vent, 3.125" c/l from each corner.

Reinforcement: One (1) aluminum reinforcement inserted in fixed meeting rail. Reinforcement nominally measured .795" wide x .690" high x full length. One (1) aluminum reinforcement inserted in each vent stile and lock-rail. Reinforcement nominally measured .820" wide x .370" high x full length.

Additional Description: 1.00" x 1.00" wooden firing strips were secured to exterior of nail fin to simulate exterior sheeting of building. Wood screws and silicon were used to fasten firing strips. Wood firing strips were located ever 12" c/l x length from each corner of frame head, sill and jambs.

Screen: Roll form aluminum frame with plastic corner keys, vinyl spline, fiberglass mesh. Two (2) plastic spring pins with one located on each side of screen frame.

Installation: Forty-four (44) #10 x .750" P P.H. S.M.S fasteners were used to secure the specimen to the wooden buck in the following manner: Eleven (11) in each frame jamb located at 3.000", 7.000", 11.000", 15.000", 19.000", 23.000", 26.000", 34.000", 38.000", 40.000" and 48.000" measuring from frame head to frame sill. Twelve (12) in the frame head and sill located at 2.750", 6.750", 10.750", 19.500", 22.500", 30.250", 34.250", 38.250", 46.250", 62.000", 66.000" and 70.000" measuring from left frame jamb to right frame jamb.

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2/13/04

Surface Finish: White

Comment: Nominal 2-mil polyethylene film was used to seal against air leakage during structural loads. The film was used in a manner that did not influence the test results.

Performance Test Results

<u>Paragraph No.</u>	<u>Title of Test</u>	<u>Method</u>	<u>Measured</u>	<u>Allowed</u>
2.1.2	Air Infiltration @ 1.57psf	ASTM E 283-91	.16 cfm/ft ²	.30 cfm/ft ²
	The specimen tested exceeds the performance levels specified in AAMA/NWWDA 101/I.S.2-97 for air infiltration.			
2.1.3	Water Resistance 5.0 gph/ft ² WTP=4.50 psf	ASTM E 547-00 Four (4) 5 min. cycles ASTM E 331-00 15 min. duration	No Entry	No Entry
	Testing conducted with and w/o insect screen.			
2.1.4/4.4.2	Uniform Load Structural Permanent Deformation @ 45.0 psf Positive @ 45.0 psf Negative	ASTM E 330-02 10-second load duration	.073" .022"	.192" .192"
2.1.8	Forced Entry Resistance Results	AAMA 1302.5-76		
	Test A		Less than 1/2"	1/2"
	Test B		Less than 1/2"	1/2"
	Test C		Less than 1/2"	1/2"
	Test D, E, & F		Less than 1/2"	1/2"
	Test G		Less than 1/2"	1/2"
2.2.2.5.1	Operating Force	AAMA/NWWDA 101/I.S.2-97	13 lbs.	30 lbs.
2.2.2.5.2	Deglazing Top Rail 50 lbs. Bottom Rail 50 lbs. Left Stile 70 lbs. Right Stile 70 lbs.	ASTM E 987-88	.018" = 1.80% <100% .014" = 1.40% <100% .026" = 2.60% <100% .030" = 3.00% <100%	
2.1.7	Welded Corner Test	AAMA/NWWDA 101/IS2-97	Passed	Passed

Handwritten signature and date:
 2/13/04

Test Date: January 7, 2004

Test Completion Date: January 7, 2004

Remarks: Detail drawings were available for laboratory records and comparison to the test specimen at the time of this report. A copy of this report along with representative sections of the test specimen will be retained by CTL for a period of four (4) years. The results obtained apply only to the specimen tested.

This test report does not constitute certification of this product, but only the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

Certified Testing Laboratories assumed that all information provided by the client is accurate and that the physical and chemical properties of the components are as stated by the manufacturer.

Certified Testing Laboratories

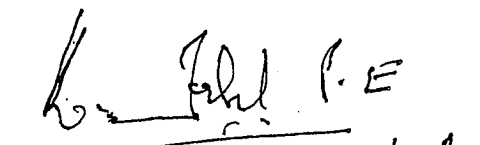


Michael Miller Lab Technician
Certified Testing Laboratories, Inc.
Architectural Division

All Tests Witnessed by:

Stephen Gibbs- Certified Testing Lab.
Randy Graves- MGM Industries.

cc: MGM Industries. (2)
A.L.I. (2)
Ramesh Patel P.E. (1)
File (1)



Ramesh Patel, P.E.
Florida Reg. #20224 2/13/04