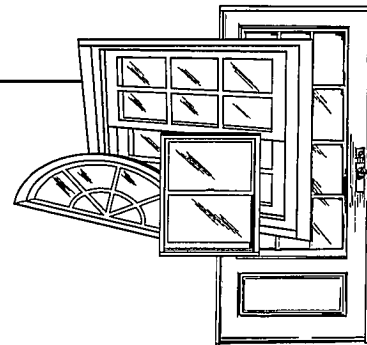


CERTIFIED TESTING LABORATORIES

Architectural Division • 7252 Narcoossee Rd. • Orlando, FL 32822
(407) 384-7744 • Fax (407) 384-7751
Web Site: www.ctlarch.com
E-mail: ctlarch.com



Report Number: CTLA 1565W-A
Report Date: November 28, 2006

STRUCTURAL PERFORMANCE TEST REPORT

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

Product Type and Series: SERIES 5600 VINYL FIN FRAME SINGLE HUNG
WINDOW H-R40 1.118mm x 1.600mm (44" x 63")

Test Specification: AAMA/WDMA/CSA 101/LS.2/A440-05 "Standard/Specification for
Windows, Doors and Unit Skylights"

Test Specimen

Frame: The extruded vinyl fin frame measured 1.118mm (44") wide x 1.600mm (63") high buck opening overall. Corners of frame sill and frame jambs were coped and butted corner construction and secured with two (2) #8 x .076mm (3.00") P C.S 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 .038mm (1.500") P P.H. S.M.S. fasteners, two (2) per each jamb. An aluminum snap on fin was utilized on the sill mainframe (drawing #A-127).

Configuration: Equal Lite S/H, Fixed lite in top, operable sash in bottom. Q
X

Ventilator: One (1) Active Sash measured 1.070mm (42.125") wide x 794mm (31.250") high. One (1) Fixed Lite measured 1.041mm (41.000") wide x 721mm (28.375") high. Sash constructed from extruded vinyl with coped and butted corner construction and secured with one (1) per extrusion .025mm (1.00") P P.H. S.M.S fastener. Active sash day lite opening measured 822mm (32.375") wide x 660mm (26.000") high. Fixed lite had a day lite opening of 797mm (31.375") wide x 660mm (26.000") high.

Weather-stripping:

<u>Quantity</u>	<u>Description</u>	<u>Location</u>
Four (4) strips	Ultrafab woolpile w/fin .003mm (125") x 006mm(.250")	Two (2) each side of sash stiles.
Two (2) strips	Ultrafab woolpile w/fin .003mm (125") x 006mm(.250")	Exterior channel of interlock rail.
One (1) strip	Ultrafab woolpile w/fin .003mm (125") x 006mm(.250")	Exterior of sill.
Two (2) strips	Ultrafab woolpile w/fin .003mm (125") x 006mm(.250")	One (1) each side of interior sash stiles.

Hardware & Location:

<u>Quantity</u>	<u>Description</u>	<u>Location</u>
Two (2)	Block and Tackle Balance	One (1) per frame jamb
Two (2)	Metal cam locks	.152mm (6.00") from each sash corner top rail.
Two (2)	Metal keeper	.152mm (6.00") from each corner of fixed meeting rail.
Two (2)	Plastic tilt latch	One (1) each corner of sash top rail.
Two (2)	Metal pivot bar	One (1) each corner of sash bottom rail.

Glazing: Insulated .019mm (.750") overall (.003mm (.125") Ann., .013mm (.500") air space, (.003mm (.125") Ann.) Interior 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 rubber-setting blocks that measured .022mm (.850") wide x .022mm (.850") high x .017mm (.650") thick. .013mm (.500") glazing bite.

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

Weep System: N/A

Reinforcement: One (1) vinyl reinforcement inserted in fixed meeting rail. Reinforcement nominally measured .017mm (.650") wide x .025mm (1.00") high x full length.

Additional Description: .025mm (1.00") width x .025mm (1.00") high wooden firing strips were secured to exterior of nail fin to simulate exterior sheeting of building. .032mm (1.250") P.C.S. Wood screws and silicon were used to fasten firing strips.

Screen: Roll form aluminum frame with plastic corner keys, vinyl spline, screen mesh. Two (2) plastic spring pins with one (1) located on each side of screen frame.

Installation: Thirty-Six (36) #10 x .019mm (.750") P P.H. S.M.S fasteners were used to secure the specimen to the wooden buck in the following manner: Eight (8) in the frame head and sill located at .032mm (1.250"), .067mm (2.625"), .257mm (10.125"), .441mm (17.375"), .616mm (24.250"), .813mm (32.000"), .902mm (35.500"), and 1.086mm (42.750") measuring from left frame jamb to right frame jamb. Ten (10) in each frame jamb located at .013mm (.500"), .114mm (4.500"), .305mm (12.000"), .489mm (19.250"), .660mm (26.000"), .838mm (33.000"), 1.022mm (40.250"), 1.207mm (47.500"), 1.397mm (55.000"), and 1.575mm (62.00") measuring from frame sill to frame head.

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</u>	<u>Title of Test</u>	<u>Method</u>	<u>Measured</u>	<u>Allowed</u>
5.3.1.1.2	Operating Force Operable sash	ASTM E2068 Max. Force to maintain motion Max. Force to initiate motion	22/lbf 12/lbf	30/lbs Report only
5.3.2	Air Infiltration @ 1.57psf	ASTM E283-99	0.013 cfm/ft ²	.30 cfm/ft ²
The tested specimen meets the performance levels specified in AAMA/WDMA 101.I.S.2/A440-05				
5.3.3.2	Water Resistance 5.0 gph/ft ² WTP=6.0 psf	ASTM E547-00 Four (4) 5 min. cycles ASTM E331-00 Fifteen (15) minute duration	No Entry No Entry	No Entry No Entry
The specimen was tested with and without an insect screen installed.				
5.3.4.2	Uniform Load Structural Permanent Deformation @ 45.0 psf Positive (D/P +30)	ASTM E330-02 Ten (10) second duration Loc.1	0.7mm(0.027")	4.5mm(0.176")
	@ 45.0 psf Negative (D/P -30)	Loc.1	1.2mm(0.049")	4.5mm(0.176")
5.3.5	Forced Entry Resistance Type "B" Window Assembly Tools used: a spatula (10.1.1.1) and a piece of stiff wire (10.1.1.2). The test specimen meets the performance Grade 40.	ASTM F588-04 T ₁ = 10 minutes	Passed	
5.3.6.2	Welded Corner Test Procedure "A"	ASTM D618-00	Passed	
Note: When loaded to failure, the break did not extend along the entire weld line.				
5.3.6.3	Deglazing Top Rail 70 lbs. Bottom Rail 70 lbs. Left Stile 50 lbs. Right Stile 50 lbs.	ASTM E 987-94	.167" = 35.6% <100% .220" = 46.9% <100% .085" = 18.1% <100% .054" = 11.5% <100%	

Test Date: August 7, 2006

Test Completion Date: August 10, 2006

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, Inc.



Ryan Blakely
Senior Lab Technician
Architectural Division
Certified Testing Laboratories, Inc.

All Tests Witnessed by:

Trace Blakely- 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