CERTIFIED TESTING LABORATORIES

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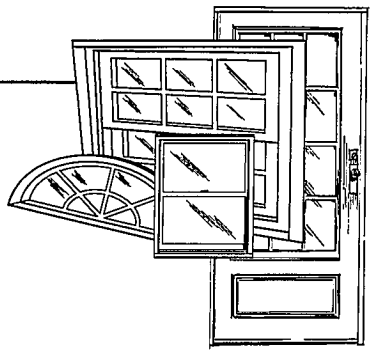

Report Number: CTLA 1565W-1A
Report Date: November 28, 2006

STRUCTURAL PERFORMANCE TEST REPORT

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

Product Type and Series: SERIES 8010 VINYL FIN FRAME DOUBLE HUNG WINDOW H-R35 1.118mm x 1.600mm (44" x 63")

Test Specification: AAMA/WDMA/CSA 101/I.S.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. An aluminum snap on fin was utilized on the sill mainframe (drawing #A-127).

Configuration: Equal Lite D/H, operable sash in top, operable sash in bottom. X
X

Ventilator: Two (2) Active Sashes. Bottom sash measured 1.070mm (42.125") wide x 794mm (31.250") high. Top sash measured 1.045mm (41.125") wide x 775mm (30.500") 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. Bottom sash day lite opening measured 822mm (32.375") wide x 660mm (26.000") high. Top sash had a day lite opening of 797mm (31.375") wide x 660mm (26.000") high.

Weather-stripping:

Quantity	Description	Location
Eight (8) 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:

Quantity	Description	Location
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.
Four (4)	Plastic tilt latch	One (1) each corner of sash top rail.
Four (4)	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 and vent corners

Weep System: N/A

Reinforcement: N/A

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

Paragraph	Title of Test	Method	Measured	Allowed
5.3.1.1.2	Operating Force Operable sash	**ASTM E2068** Max. Force to maintain motion Max. Force to initiate motion	19/lbf 10/lbf	30/lbs Report only
5.3.2	Air Infiltration @ 1.57psf	**ASTM E283-99**	0.030 cfm/ft²	.30 cfm/ft²

The tested specimen meets the performance levels specified in AAMA/WDMA 101.I.S.2/A440-05

5.3.3.2	Water Resistance	**ASTM E547-00**		
	5.0 gph/ft²	Four (4) 5 min. cycles	No Entry	No Entry
	WTP=5.25 psf	**ASTM E331-00**	No Entry	No Entry
		Fifteen (15) minute duration		
	The specimen was tested with and without an insect screen installed.			
5.3.4.2	Uniform Load Structural	**ASTM E330-02**		
	Permanent Deformation	Ten (10) second duration		
	@ 45.0 psf Positive (D/P +30)		Loc.1 1.7mm(0.065")	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	**ASTM F588-04**	Passed	
	Type "B" Window Assembly	T_1 = 10 minutes		
	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.			
5.3.6.2	Welded Corner Test	**ASTM D618-00**	Passed	
	Procedure "A"			
	Note: When loaded to failure, the break did not extend along the entire weld line.			
5.3.6.3	Deglazing	**ASTM E 987-94**		
	Top Rail 70 lbs.		.140" = 2.00% <100%	
	Bottom Rail 70 lbs.		.204" = 2.60% <100%	
	Left Stile 50 lbs.		.182" = 0.80% <100%	
	Right Stile 50 lbs.		.153" = 1.20% <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)
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