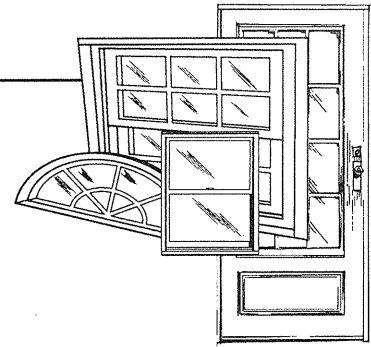


CERTIFIED TESTING LABORATORIES

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Report Number: CTLA-277W-R
Report Date: May 28, 1998

STRUCTURAL PERFORMANCE TEST REPORT

Client: NUAIR ALUMINUM WINDOW AND DOORS
8105 ANDERSON ROAD
P.O. BOX 15436
TAMPA, FLORIDA 33684

Product Type and Series: SERIES 900 ALUMINUM FIXED LITE F-H C80 (73.125" x 73.125" 3/16" TEMPERED) (F-HC 40 73.125" x 73.125" 1/4" ANNEALED) (F-HC 60* 61" x 61" 3/16" ANNEALED) (F-C 35 49" x 49" 1/8" ANNEALED)

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

Test Specimen

Frame: The main frames measured 73.125" x 73.125", 61" x 61", 49" x 49.25". Coped and butted corner secured with two (2) #8 x 1" P.H., S.Q. fasteners.

Configuration: Single fixed lite.

Panels: N/A

Weatherstripping: N/A

Hardware & Location: N/A

Glazing: 73.125" x 73.125", 3/16" tempered and 1/4" annealed glass. 61" x 61", 3/16" annealed glass. 49" x 49.25", 1/8" annealed glass. All were exterior glazed with adhesive backbedding compound and roll formed aluminum glazing bead.

Sealant: All frame corners were sealed with a small joint sealant.

Weep System: N/A

Muntins: N/A

Reinforcement: N/A

Additional Description: N/A

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8/19/98

Screen: N/A

Installation: 73.125" x 73.125": 3/16" tempered unit, twenty five (25) #10 x1.5" P.H., S.Q. fasteners 5" from each corner nominally 16" o.c.
73.125" x 73.125": 1/4" annealed unit, sixteen (16) #8 x 1" P.H., P.H. fasteners 5" from each corner nominally 20" o.c.
61" x 61": 3/16" annealed unit, sixteen (16) #8 x 1" P.H., P.H. fasteners 4" from each corner nominally 17" o.c.
49" x 49.25": 1/8" annealed unit, twelve (12) #8 x 1" P.H., P.H. fasteners 4" from each corner and mid-span.

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 @ 1.57 psf The specimen tested exceeds the performance levels specified in AAMA/NWWDA 101/I.S.2-97 for air infiltration.	ASTM E 283-91	.0 cfm/ft ²	.30 cfm/ft ²
2.1.3	Water Resistance 5.0 gph/ft ² WTP=16 psf	ASTM E 547-93 Four (4) 5 min. cycles ASTM E 331-93 Fifteen (15) min. duration	No Entry No Entry	No Entry No Entry
2.1.4.2	Uniform Load Structural Ten (10) second load duration)	ASTM E 330-90		
	72.125" x 72.125" 3/16" Tempered Glass Permanent Deformation @120 psf Positive Permanent Deformation @120 psf Negative		Negligible Negligible	.293" .293"
	72.125" x 72.125" 1/4" Annealed Glass Permanent Deformation @60 psf Positive Permanent Deformation @60 psf Negative		Negligible Negligible	.293" .293"
	61" x 61" 3/16" Annealed Glass Permanent Deformation @90 psf Positive Permanent Deformation @90 psf Negative		Negligible Negligible	.244" .244"
	49" x 49.25" 1/8" Annealed Glass Permanent Deformation @52.5 psf Positive Permanent Deformation @52.5 psf Negative		Negligible Negligible	.197" .197"
2.1.8	Forced Entry Resistance Results T ₁ = 5 minutes Tools used: A spatula (10.1.1.1) and a piece of stiff wire(10.1.1.2)	ASTM E588-97		

The test specimen meets the performance Grade 10

NUAIR ALUMINUM WINDOW AND DOORS
 CTLA-277W-R
 [Signature]
 8/11/98

Test Date: April 10, 1998

Test Completion Date: May 28, 1998

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.

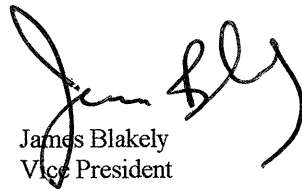
This test report does not constitute certification of this product, but only the above test results were obtained using the designated test methods and they indicate compliance with the performance requirements (paragraphs as listed) of the above referenced specifications.

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.


Witness:

James Blakely,	CTL
Jens Rosowski,	NUAIR
Ken Moran,	NUAIR

Certified Testing Laboratories, Inc.


James Blakely
Vice President

cc: NU-AIR (2)
NAMI (2)
Ramesh Patel P.E.
File


Ramesh Patel, P.E.
Florida Reg. #20224
8/19/98