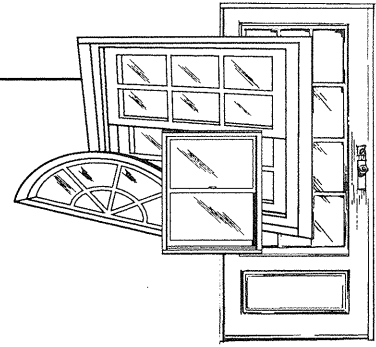


CERTIFIED TESTING LABORATORIES

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-386W6-W7
Report Date: April 19, 1999

STRUCTURAL PERFORMANCE TEST REPORT

Client: NU-AIR WINDOW and DOOR
PO BOX 15436
TAMPA, FL 33684

Product Type and Series: Gateway Series OH 8/OH 9 Aluminum Horizontal Slider HS-C 30 (123" x 61")
Downsize Series OH 2/ OH 3 Aluminum Horizontal Slider HS-C 40 (123" x 49")

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

Frame: The extruded aluminum flange frame measured 123" x 61" overall. Coped and butted corner construction. Each corner secured with two (2) # 8 x .750 S.H., S.M.S fasteners. Fixed meeting rail secured to main frame with one (1) # 8 x .750" S.H, S.M.S fastener top and bottom.

Downsize: Frame measured 123" x 4.9" overall

Configuration: XOX

Ventilators: Both operable vents measured 28.5" x 57.75" overall. Coped and butted corner construction. Each corner secured with one (1) # 8 x .750 S.H, S.M.S fastener downsize operable vents measured 28.5" x 45.75" overall.

Panels: Fixed lite measured 65.75" x 58.75" overall.

Downsize: Fixed lite measured 65.75" x 46.75" overall.

Weather Stripping:	<u>Quantity</u>	<u>Description</u>	<u>Location</u>
Frame	One (1) Strip	Woolpile with integral Plastic fins .300" high.	Fixed Meeting Rail
Frame	One (1) Strip	Woolpile with integral Plastic fins .300" high.	Each Frame Jamb
Sash	One (1) Strip	Woolpile with integral Plastic fins .300" high.	Top Rail Exterior
Sash	One (1) Strip	Woolpile with integral Plastic fins .300" high.	Bottom Rail Exterior
Sash	One (1) Strip	Bulb Vinyl .300" o.d.	Lead or Butt Stile

[Handwritten Signature]
5/6/99

Hardware & Location:	<u>Quantity</u>	<u>Description</u>	<u>Location</u>
	Four (4)	Metallic cam locks	10.25" from each end of vent interlock stile.
	Four (4)	Nylon roller housing with brass wheel	Each end of vent bottom rail.

Glazing: 3/16" annealed glass exterior glazed with adhesive backbedding compound and roll formed aluminum glazing bead.

Sealant: A narrow joint sealant was used on all frame and vent corners.

Weep System: Four (4) 1" x .160" high weeps located in the sill track insert, 4" and 34" from each corner, weeping to sill can. Four (4) 1.5" x .120" high weeps located in the sill can 3" and 33.25" from each corner weeping to the exterior.

Reinforcement: In gateway unit only. 123" x 61". Two (2) aluminum "I" beam reinforcement measuring .690" x .625" x .090 (web) one (1) located in each vent interlock stile. Two (2) aluminum angle .625 x .500" x .230" one (1) located in each frame meeting rail.

Additional Description: N/A

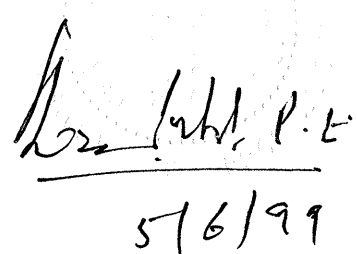
Screen: Roll formed aluminum screen with fiberglass mesh, vinyl spline, plastic corner keys, two (2) pull tabs and two (2) spring clips.

Installation: Fifteen (15) # 10 x 1" csk PH were used to secure the specimen to the wooden test buck. Seven (7) in the head measuring from left jamb 2", 27", 39.5", 59.5", 78", 94" and 119" and four (4) in each jamb measuring from head to sill 2", 20", 39" and 57".

DOWNSIZE: Thirteen (13) # 10 x 1" csk PH were used to secure the specimen to the wooden test buck. Seven (7) in the head measuring from left jamb 2", 27", 39.5", 59.5", 78", 94" and 119" and three (3) in each jamb measuring from head to sill 2", 20" and 47"

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.


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Performance Test Results

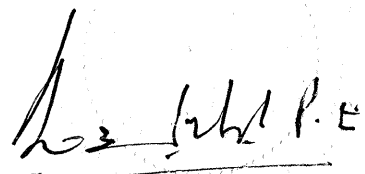
<u>Paragraph No</u>	<u>Title of Test</u>	<u>Method</u>	<u>Measured</u>	<u>Allowed</u>
*2.1.2	Air Infiltration	ASTM E283-91	.19 cfm/ft ²	.3 cfm/ft ²
The specimen as tested exceeds the performance levels specified in AAMA/NWWDA 101/I.S.2-97.				
*2.1.3	Water Resistance	ASTM E547		
	5.0 gph/ft ²	Four (4) five minute cycles	No Entry	No Entry
	WTP=6.75 psf	ASTM E331		
		Fifteen (15) minute duration	No Entry	No Entry
Unit tested with and without insect screen.				
2.1.4.2	Uniform Load	ASTM E330-90		
Gateway	Structural	Ten (10) second loading		
123" x 61"	Permanent Deformation			
	@ 45 psf Positive		.015"	.238"
	@ 45 psf Negative		.029"	.238"
Downsize	Uniform Load	ASTM E330-90	.031"	.238"
123" x 49"	Structural	Ten (10) second loading	.042"	.238"
	Permanent Deformation			
	@ 60 psf Positive			
	@ 60 psf Negative			
*2.1.8	Forced Entry Resistance	AAMA 1302.5-76		
	Test A		0"	1/2"
	Test B		0"	1/2"
	Test C		0"	1/2"
	Test D, E, F		0"	1/2"
	Test G		0"	1/2"
*2.2.2.5.1	Operating Force	AAMA/NWWDA 101/I.S.2-97		
	Left Vent		1 lb.	25 lbs.
	Right Vent		9 lbs.	25 lbs.
*2.2.2.5.2	Deglazing	ASTM E987-88		
	Top Rail 50 lbs.		.005"= 1.0% <100%	
	Bottom Rail 50 lbs.		.004"= 0.8% <100%	
	Left Stile 70 lbs.		.008"= 1.6% <100%	
	Right Stile 70 lbs.		.008"= 1.6% <100%	

* Reference all tests done on Gateway unit only

Testing done at NUAIR facility in Tampa, FL

Test Date: February 19, 1999

Test Completion Date: March 24, 1999


 John P. E.
 5/6/99

Remarks: Detailed 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 that 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 assumes 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.

All Tests Witnessed by:

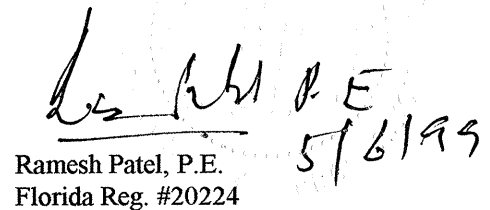
Jens Rosowski Nuair
Ken Moran Nuair
Chris Bennett CTL

Certified Testing Laboratories, Inc.



Christopher Bennett
Lab Manager
Architectural Division

NUAIR (2)
NAMI (2)
Ramesh Patel (1)
File (1)



Ramesh Patel, P.E.
Florida Reg. #20224