



R & B Wagner, Inc

Series: Panel Grip 2 Aluminum Balustrade Railing
System

Client Package

Fenestration Testing Laboratory
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Medley, Florida 33166
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Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

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Florida State Cert. No.	TST1657
Miami Dade County Cert. No:	14-0806.03
Report Date:	10/1/2015
Completion Date:	8/27/2015
Expiration Date:	8/27/2025
Miami Dade County Auth. No:	FTL-15038
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Lab. Number:	8442
Project Number:	15-5732

OFFICIAL TEST REPORT

MANUFACTURER: R & B Wagner, Inc

SPECIFICATIONS: Florida Building Code
TAS 201, TAS 202 (Loads)
ANSI Z97.1, concentrated load
PROJECT: Florida State Approval
Miami Dade County

ADDRESS: 10600 West Brown Deer Road
Milwaukee, Wisconsin 53224

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DESCRIPTION OF SAMPLE	
Model Designation:	Series: Panel Grip 2 Aluminum Balustrade Railing System
Overall Size:	12'-2 1/16" (146 1/16") by 3'-7 13/16" (43 13/16") high
Sample A-1	

Glazing			
Glazing Location	Glazing Material	Glazing Compound	Compound Color
All three lites	*13/16" nominal laminated glass composed of (2) 3/8" tempered glass	none	n/a
Interlaying Film: *0.060" **DuPont SentryGlas		Laminator: **Oldcastle	
Glazing Method: The glass was secured using a single row of **PanelGrip™ located 3 3/4", 11 1/8", 23 3/8", 32 1/2", 41 1/8", 53 1/4", 64 1/16", 74 11/16", 83 1/8", 92 15/16", 101 1/16", 111", 122 3/4", 131", and 141 3/8" from left. Each **PanelGrip™ is secured using one 1/4-20 by 1 1/2" long socket head machine screws with washer and nut.			
Pocket glazed at the top with a *1" glazing penetration using glazing tape on the interior, exterior and glazing pocket.			
Daylight Opening:	Right lite: 47 5/8" by 38 5/16" high	Left and center lite: 47 7/16" by 38 5/16" high	

Additional Information

The sample was testing using a 146 1/16" long stainless steel hand rail.

Sample Installation

The sample was installed into a 4,000 psi concrete test slab. The shoe base was installed using a single row 5/8" by 6 1/8" HWH wedge bolts located 2 1/8", 6 3/4", 12 3/4", 18 9/16", 24 3/4", 30 5/8", 36 3/4", 42 5/8", 48 5/8", 54 3/4", 60 3/4", 66 3/4", 72 3/4", 78 3/4", 84 3/4", 90 3/4", 96 7/8", 102 3/4", 114 5/8", 120 3/4", 126 3/4", 132 5/8", 138 5/8" and 143 5/8" from left.



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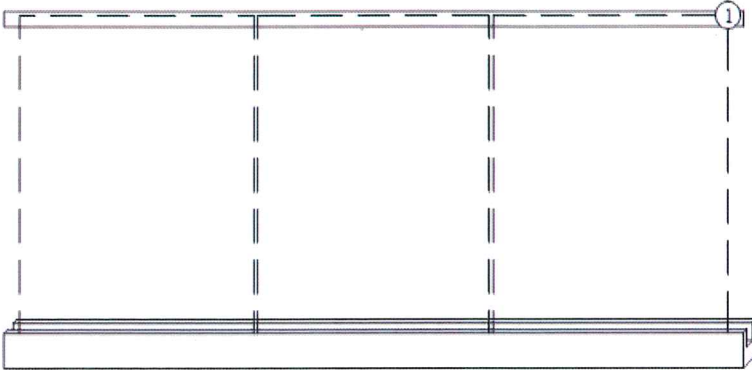
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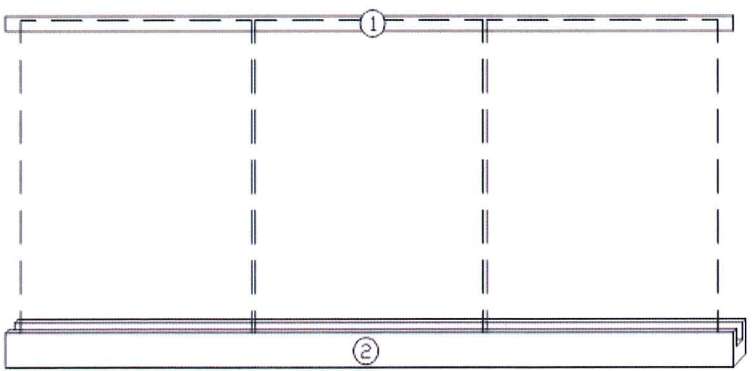
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Sample: A-1	Temperature: 83°F	Barometric Reading: 30.08 inches Hg		
Title of Test	Load	Notes		
Concentrated Load Test	400.0 lbs	As per FBC section 1618.4.6.1. A horizontal load was applied at the corner of the hand rail		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.389"	0.030"	Passed	

Sample: A-1	Temperature: 83°F	Barometric Reading: 30.08 inches Hg		
Title of Test	Load	Notes		
Concentrated Load Test	1,216.0 lbs	As per FBC section 1618.4.6.1. A horizontal load was applied at center of the hand rail		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	2.250"	0.201"	Passed	
2	0.049"	0.002"	Passed	



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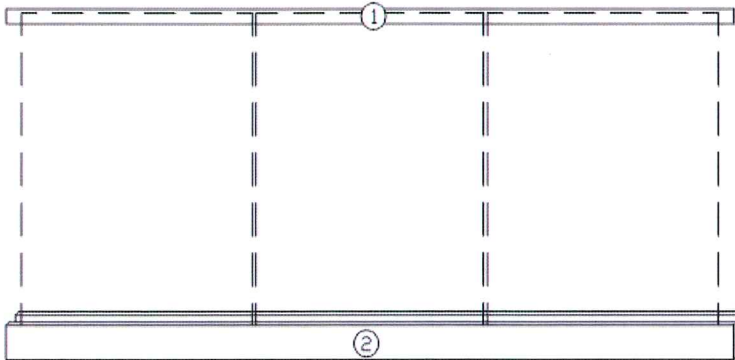
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Sample: A-1	Temperature: 83°F	Barometric Reading: 30.08 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Positive Load	40.0 psf	
	Results	Passed

Sample: A-1	Temperature: 83.0°F		Barometric Reading: 30.08 inches Hg	
Title of Test		Pressure	Notes	
Design Load Test Positive Load		40.0 psf		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.503"	0.030"	Passed	
2	0.060"	0.005"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
2.) 0.060"		0.005"	91.7%	

Sample: A-1	Temperature: 85°F	Barometric Reading: 30.04 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Negative Load	40.0 psf	
	Results	Passed



Quality Accuracy Assurance

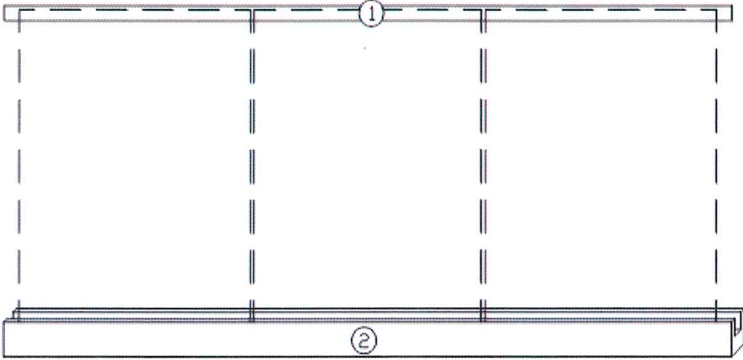
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Sample: A-1	Temperature: 85°F	Barometric Reading: 30.04 inches Hg		
Title of Test		Pressure	Notes	
Design Load Test Negative Load		40.0 psf		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.515"	0.026"	Passed	
2	0.027"	0.001"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
2.) 0.027"		0.001"	96.2%	



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Sample: A-1	Temperature: 83°F	Barometric Reading: 30.08 inches Hg		
Title of Test		Pressure	Notes	
Uniform Structural Test Positive Load		80.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info
1	3.375"	0.210"	Passed	
2	0.190"	0.010"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
2.) 0.190"		0.010"	94.7%	



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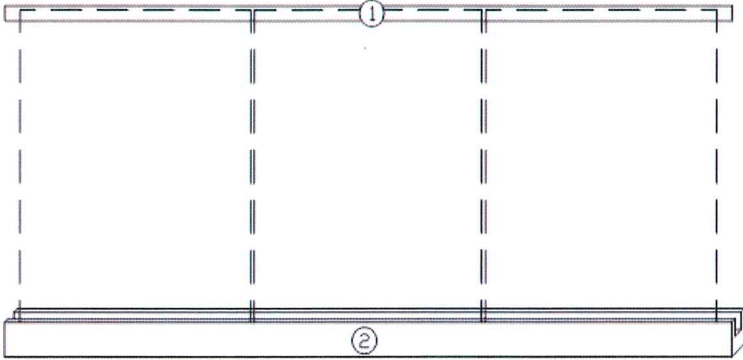
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Sample: A-1	Temperature: 85°F	Barometric Reading: 30.04 inches Hg		
Title of Test		Pressure	Notes	
Uniform Structural Test Negative Load		80.0 psf		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	2.875"	0.204"	Passed	
2	0.048"	0.004"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
2.) 0.048"		0.004"	91.7 %	



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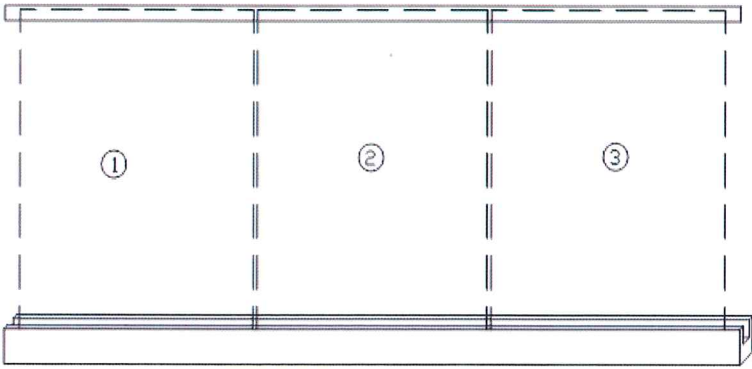
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Sample: A-1	Temperature: 79°F	Barometric Reading: 29.99 inches Hg
Title of Test		Notes
Drop Test		As per FBC section 1618.4.6.3
		
Drop #	Results	
1	Passed	Impacted center of lite. After impact the glass did not break.
2	Passed	Impacted center of lite. After impact the glass did not break.
3	Passed	Impacted center of lite. After impact the glass did not break.



Quality Accuracy Assurance

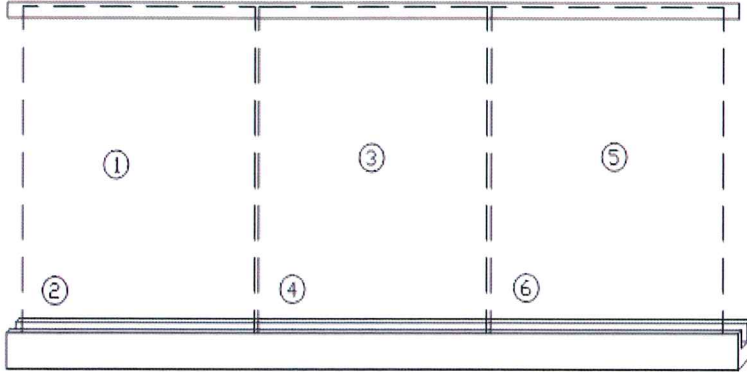
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Sample: A-1	Temperature: 83.1°F	Barometric Reading: 30.01 inches Hg	
Title of Test		Notes	
Large Missile Impact Test			
Missile Weight		Missile	
9.25 pounds		2" by 4" by 92" long	
			
Impact	Speed	Results	Add. Info
1	49.6 ft/sec	Passed	
2	49.8 ft/sec	Passed	
3	49.9 ft/sec	Passed	
4	50.0 ft/sec	Passed	
5	49.8 ft/sec	Passed	
6	49.9 ft/sec	Passed	



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Sample: A-1		Temperature: 83°F		Barometric Reading: 29.98 inches Hg	
Title of Test		Load		Notes	
Concentrated Load Test		600.0 lbs		As per FBC section 1618.4.6.1. A horizontal load was applied on center of the hand rail	
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	1.629"	None	Passed		
2	0.069"	0.018"	Passed		

Sample: A-1		Temperature: 83°F		Barometric Reading: 29.98 inches Hg	
Title of Test		Load		Notes	
Concentrated Load Test		200.0 lbs		As per FBC section 1618.4.6.1. A horizontal load was applied at the corner of the hand rail	
Reading#	Deflection	Permanent Set	Results	Add. Info	
1	1.062"	0.062"	Passed		



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Sample: A-1	Temperature: 79°F		Barometric Reading: 29.97 inches Hg	
Title of Test		Pressure	Notes	
Design Load Test Positive Load		40.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info
1	2.500"	0.003"	Passed	
2	0.085"	0.007"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
2.) 0.085"		0.007"	91.8%	



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Sample: A-1	Temperature: 88°F	Barometric Reading: 30.00 inches Hg		
Title of Test		Pressure	Notes	
Design Load Test Negative Load		40.0 psf		
Reading#	Deflection	Permanent Set	Results	Add. Info
1	2.000"	0.002"	Passed	
2	0.016"	0.003"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
2.) 0.016"		0.003"	81.2%	

Revision	Description	Author	Effective Date
0	Initial Release	Ms. Iliana Sanchez	10/1/2015



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Notes

* designates measurements by laboratory

** as per manufacturer

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At conclusion of above tests, there was no apparent damage to fasteners and after impact the glass did break, but remained in place and there wasn't any apparent tear in the inter layer film. Test specimens were covered with 1.5 mil plastic sheeting to seal from air leakage when load test were performed, however this had no effect on above results.



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Remarks

Detailed drawings will be retained by Fenestration Testing Laboratory for a period of one year from the original test date, and test report for a period of four years. Due to the code cycle change it is recommended that this report be evaluated during the lifespan of this document.

This product was tested in accordance with the Florida Building Code (2014) TAS 202 (loads) and TAS 201, with the deviation that only one sample was tested.

This product was tested in accordance with ANSI Z-97.1-09 (FBC section 1618.4.6.3) with no deviations.

This product was tested in accordance with the Florida Building Code section 1618.4.6.1 (concentrated load test) with no deviations.

Testing was conducted as per instructions received from the manufacturers company representative.

Witnessed by:

Ms. Idalmis Ortega, P.E.

FENESTRATION TESTING LABORATORY, INC.

Mr. Manny Sanchez
Chief Executive Officer

Technicians:

Mr. Harold Anacona

Mr. Gerresse Lee