



Quality Accuracy Assurance

Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: (305) 885-3328 Fax: (305) 885-3329 (888) 819-7877

e-mail: clientservices@ftl-inc.com www.ftl-inc.com

Report Date: 9/6/2016
Completion Date: 8/11/2016
Page No. 1 of 7
Lab. Number: 9166
Project Number: 16-6597

OFFICIAL TEST REPORT

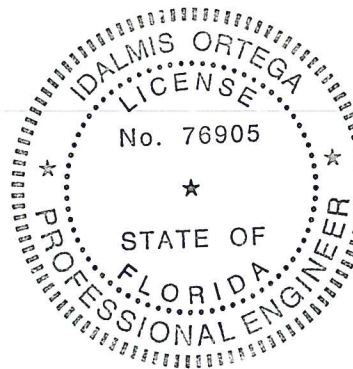
MANUFACTURER: Alliance Glass & Aluminum LLC
ADDRESS: 2140 West Flagler Street, Suite 206
Miami, Florida 33135

SPECIFICATIONS: Florida Building Code
Concentrated Load Test, TAS 202 and ANSI Z97.1
PROJECT: Alliance Glass & Aluminum LLC

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Results Sample A-1		
Concentrated Load Test	1607.8.1/1607.8.1.1	4
Concentrated Load Test	1607.8.1/1607.8.1.1	4
1/2 Structural Load Test Positive	TAS 202	4
Design Load Test Positive	TAS 202	5
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Uniform Structural Load Test Positive	TAS 202	6
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Drop Test	ANSI Z97.1	7

Professional Engineer:
Idalmis Ortega, P.E.
FL License No. 76905



[Signature]
06/20/2023



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Revision	Description	Author	Effective Date
0	Initial Release	Ms. Lusinda Delgado	9/6/2016
1	Removed the expiration date from the report and updated page numbers	Ms. Lusinda Delgado	6/26/2023

Notes

* designates measurements by laboratory

** as per manufacturer

Drawings referenced in this document are an integral part of this report, therefore, are required when distributing this test report. Test results obtained represent the actual value of the tested specimens and do not constitute opinion, endorsement, or certification by this laboratory.

This test report is considered the exclusive property of the client named herein and is applicable to the sample tested. This report may not be reproduced without the approval of Fenestration Testing Laboratory, Inc.

At conclusion of above tests, there was no apparent damage to the concrete slab or fasteners and after the impact the glass did not 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.

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), with the deviation that only one sample was tested.

This product was tested in accordance with ANSI Z97.1-09 (FBC section 1618.4.6.3) with no deviations.

This product was tested in accordance with the Florida Building Code section 1607.8.1/1607.8.1.1 (concentrated load test) with no deviations.

Testing was conducted as per instructions received from the manufacture's company representative and as per drawings 15-01 sheet 1-4 dated February 3, 2015.



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DESCRIPTION OF SAMPLE	
Model Designation:	Aluminum Glass Railing
Overall Size:	12-8" (152") by 3'-8" (44") high
Size and Location of Post:	42 7/16" high vertical post located one at each end and 51" and 100 1/2" from left
Sample A-1	

MATERIAL CHARACTERISTICS			
Members	Material**	Item Number**	Joint Type
Top Rail	6063-T6	2	N/A
Bottom Rail	6063-T6	2	N/A
Hand Rail	6063-T6	1	N/A
Vertical Posts	6063-T6	3	N/A
Railing Construction		Size of Fasteners	
Top rail fastened with	N/A	N/A	
Bottom rail fastened with	N/A	N/A	

Glazing			
Glazing Location	Glazing Material	Glazing Compound	Compound Color
All three lites of glass	*1/2"nominal laminated glass composed of (2) 1/4"***tempered glass	None	N/A
Interlaying Film: *0.035" **Kurary SentryGlas®		Laminator: **Old Castle	
Glazing Method: Pocket glazed with a *7/8" glazing penetration using a vinyl gasket on the exterior and a vinyl wedge on the interior.			
Daylight Opening:	35 5/8"by 45 1/2" high		

Additional Information
The top rails are fastened to the handrail using a single row of No. 10 by 1" HWH located 10" from left.
The top rails are fastened to the vertical post using one 2" by 2" by 3/4" by 1/4" thick aluminum angle fastened to the top rail using two No. 14 by 1" FH SDS and fastened to the post using two No. 14 by 1" HWH SDS.
The bottom rails are fastened to the vertical post using one 2" by 2" by 3/4" by 1/4" thick aluminum angle fastened to the bottom rail using two No. 14 by 1" HWH SDS and fastened to the post using two No. 14 by 1" HWH SDS.
The sample was tested using a 1.022" by 1.597" by 3.897" long **EPDM setting block on top of a 3/8" by 3/8" 5" long aluminum tube inside the bottom rail, three per lite.
The distance between the floor and the bottom of the bottom rail is 5 5/16".



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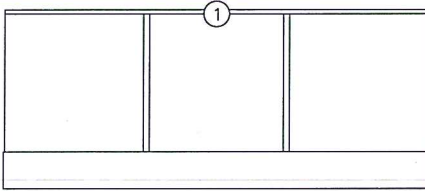
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Reinforcement		
Quantity and Type	Location	Method of Attachment
One 3" by 1/2" thick by 15 1/2" long aluminum plate	At the bottom of each vertical post	Slides in

Sample Installation
The vertical post were set into a 5" diameter hole using **Quikrete Non-Shrink Precision Grout (minimum 12,500 psi after 28 day cure time per specification) with a 4 3/4" embedment into a 3,000 psi concrete test slab. The hollow part of the vertical post embedment was also filled with grout.

Sample: A-1		Temperature: 80.1°F		Barometric Reading: 30.1 inches Hg	
Title of Test		Load		Notes	
Concentrated Load Test		400 lbs		As per FBC section 1607.8.1/1607.8.1.1. The load was applied at the right corner of the hand rail.	
<div><div></div><div></div><div></div><div></div></div>					
Reading#		Deflection		Permanent Set	
1		0.106"		0.001"	
Results		Add. Info			
Passed					

Sample: A-1	Temperature: 80.1°F	Barometric Reading: 30.1 inches Hg		
Title of Test		Load	Notes	
Concentrated Load Test		650 lbs	As per FBC section 1607.8.1/1607.8.1.1 The load was applied at the center of the hand rail.	
<div></div>				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.605"	0.369"	Passed	

Sample: A-1	Temperature: 89.9°F	Barometric Reading: 30.0 inches Hg
Title of Test	Pressure	Notes
1/2 Structural Load Test Positive Load	90.0 psf	
	Results	Passed



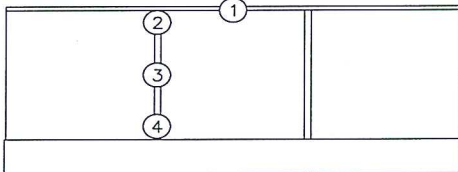
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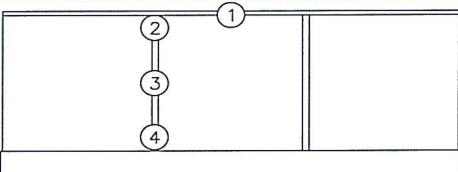
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Sample: A-1		Temperature: 89.9°F	Barometric Reading: 30.1 inches Hg	
Title of Test		Pressure	Notes	
Design Load Test Positive Load		90.0 psf		
<div></div>				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	0.673"	0.008"	Passed	
2	0.629"	0.008"	Passed	
3	0.247"	0.002"	Passed	
4	0.016"	0.001"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
1.) 0.673"		0.008"	99%	

Sample: A-1		Temperature: 89.9°F	Barometric Reading: 30.0 inches Hg	
Title of Test		Pressure	Notes	
1/2 Structural Load Test Negative Load		90.0 psf		
		Results	Passed	

Sample: A-1		Temperature: 89.9°F	Barometric Reading: 30.0 inches Hg	
Title of Test		Pressure	Notes	
Design Load Test Negative Load		90.0 psf		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	0.684"	0.007"	Passed	
2	0.608"	0.004"	Passed	
3	0.210"	0.002"	Passed	
4	0.006"	0.001"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
1.) 0.684"		0.007"	99%	



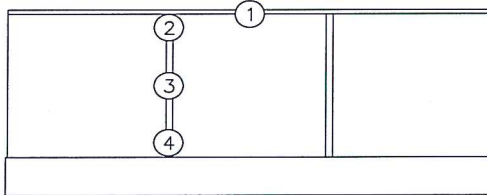
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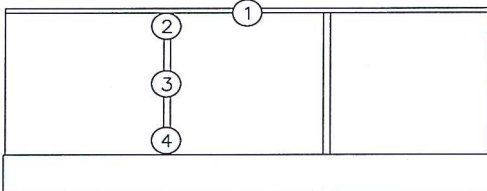
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Sample: A-1	Temperature: 89.9°F	Barometric Reading: 30.0 inches Hg		
Title of Test	Pressure	Notes		
Uniform Structural Test Positive Load	180.0 psf			
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.154"	0.089"	Passed	
2	1.057"	0.089"	Passed	
3	0.523"	0.080"	Passed	
4	0.046"	0.014"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
1.) 1.154"		0.089"	92%	

Sample: A-1		Temperature: 89.9°F	Barometric Reading: 30.0 inches Hg	
Title of Test		Pressure	Notes	
Uniform Structural Test Negative Load		180.0 psf		
				
Reading#	Deflection	Permanent Set	Results	Add. Info
1	1.518"	0.168"	Passed	
2	1.393"	0.181"	Passed	
3	0.524"	0.096"	Passed	
4	0.029"	0.014"	Passed	
Actual Movement		Actual Set	Recovery	Additional Info.
1.) 1.518"		0.168"	89%	



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Sample: A-1	Temperature: 89.0°F	Barometric Reading: 30.1 inches Hg						
Title of Test		Notes						
Drop Test		As per FBC section 1618.4.6.3						
<table border="1" style="margin: auto;"><tr><td style="text-align: center;">①</td><td style="text-align: center;">②</td><td style="text-align: center;">③</td></tr><tr><td colspan="3" style="height: 20px;"></td></tr></table>			①	②	③			
①	②	③						
Drop #	Results	Add. Info						
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.						

Witnessed by:

Ms. Idalmis Ortega, FTL P.E.

Technicians:

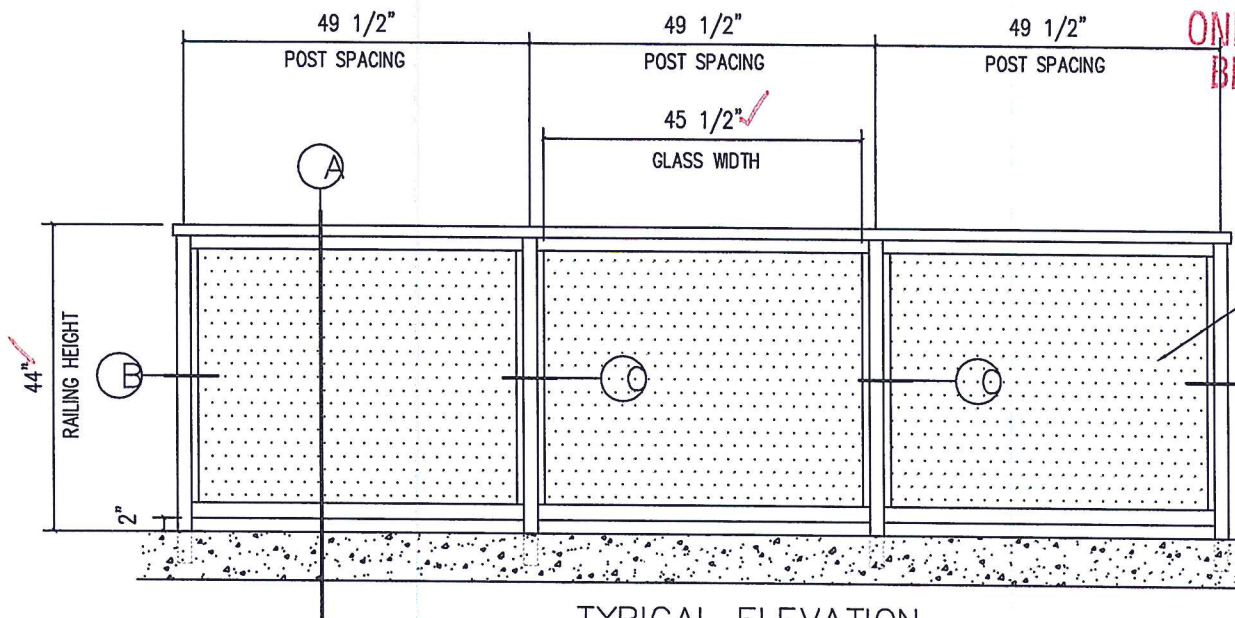
Mr. Luis Gonzalez

Mr. Michael Chala

FENESTRATION TESTING LABORATORY, INC.

Jose Sanchez

Mr. Jose Sanchez
Operation Manager



TYPICAL ELEVATION

ONLY ITEMS CHECKED IN RED HAVE BEEN VERIFIED BY LABORATORY

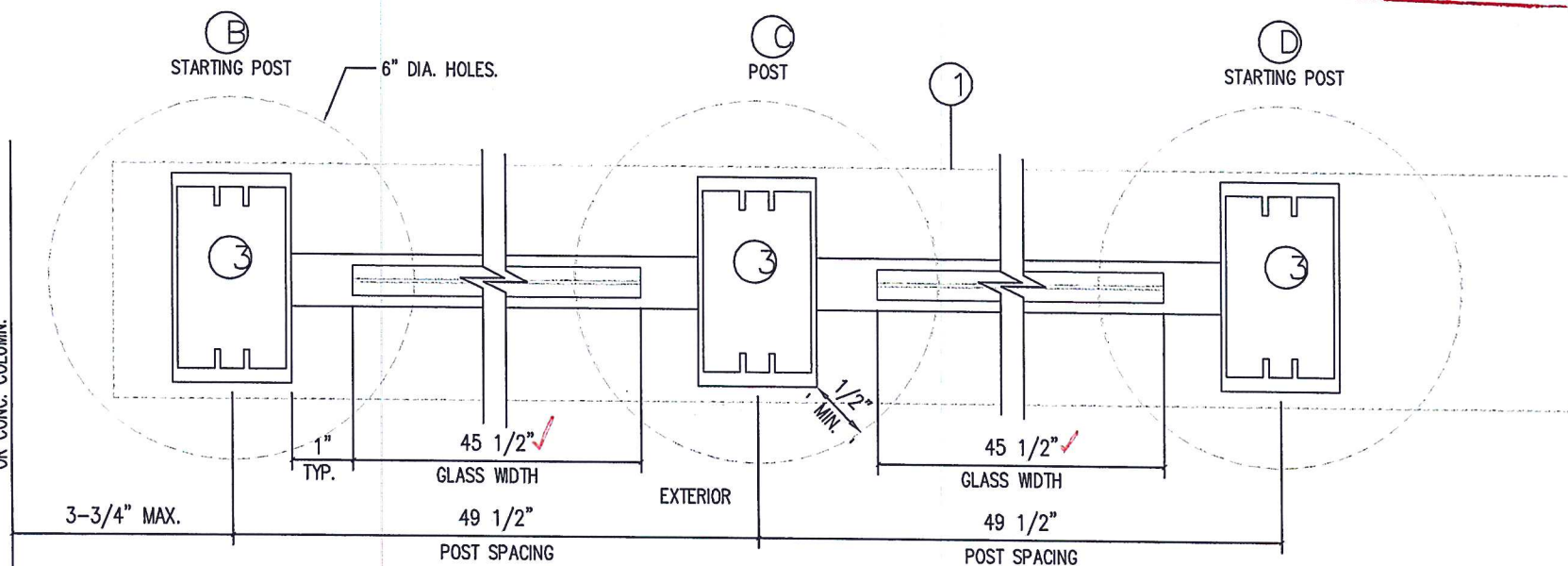
FENESTRATION TESTING LAB

LAB# 9166

DATE 9/6/16

DRAWING VERIFIED BY: J.O

FACE OF CBS WALL OR CONC. COLUMN.



TYPICAL PLAN SECTION

NOTES:

1. THIS HAS BEEN DESIGNED TO COMPLY WITH THE REQUIREMENTS OF THE FLORIDA BUILDING CODE 2010 SUPPLEMENTS (EXPOSURE C).
2. ALL ALUMINUM TO BE OF ALLOYS AS SHOWN.
3. CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI IN 28 DAYS.
4. SUPPORT THE IMPOSED LOADS.
5. ALL FASTENERS SHALL BE STAINLESS STEEL.
6. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE AWS.

PROJECT CENTER SET ALUMINUM GLASS RAILING

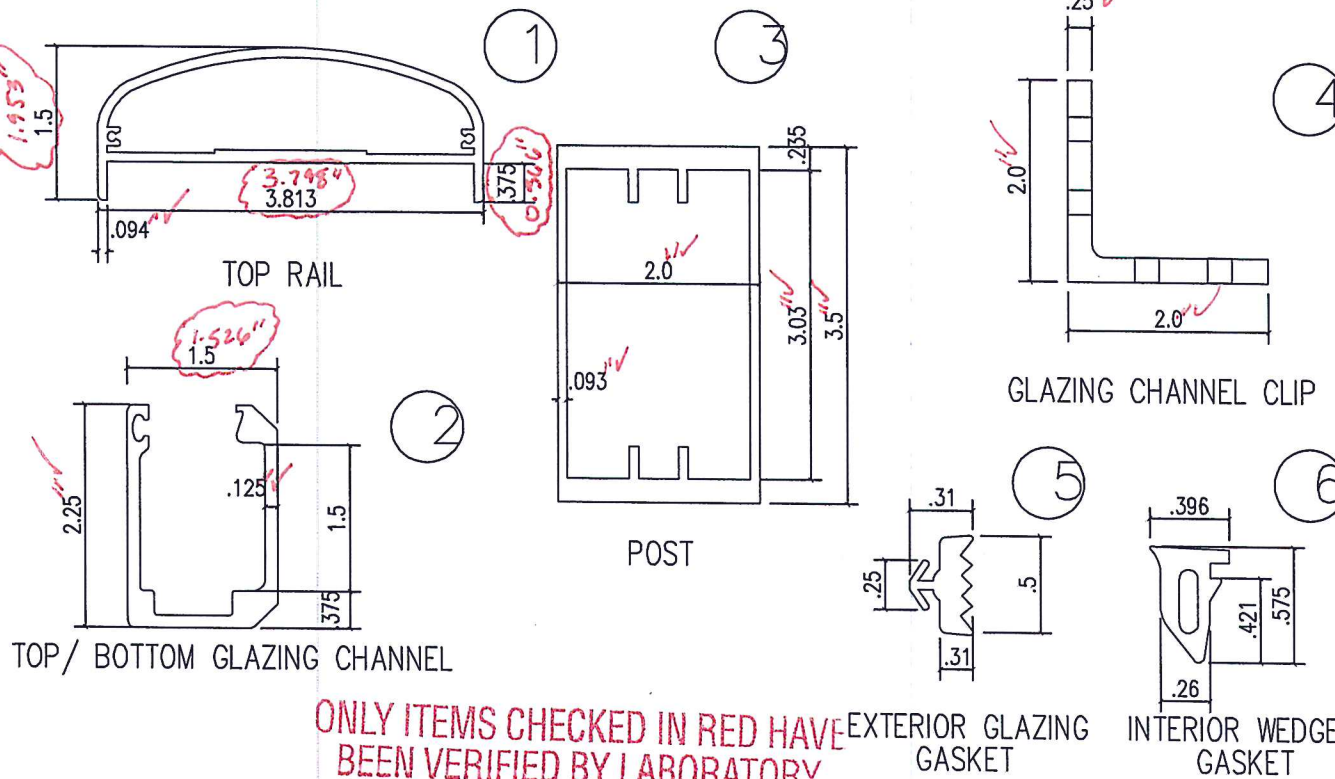
DWG No. DTC-AGR-CW1

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DATE DRAWN 6 / 7 / 16

REVISION DATE





ONLY ITEMS CHECKED IN RED HAVE
BEEN VERIFIED BY LABORATORY

ITEM	PART #	DESCRIPTION	MATERIAL	REMARKS
✓ ①	AGR-401	TOP RAIL	6063-T6	-----
✓ ②	AGR-105	TOP/BOTTOM GLAZING CHANNEL	6063-T6	-----
✓ ③	AGR-102	POST	6063-T6	-----
✓ ④	---	GLAZING CHANNEL ANGLE, $\frac{3}{4}$ LONG	6061-T6	-----
✓ ⑤	B090	EXTERIOR WEDGE GASKET	NEOPRENE	DUROMETER 70 +/- 5 SHORE A
⑥	W516	INTERIOR WEDGE GASKET	DURO TPE	DUROMETER 70 +/- 5 SHORE A
✓ ⑦	---	SETTING BLOCK ($\frac{3}{4}$ X 1-3/8" X 3" LONG) 3 PER LITE	EPDM	DUROMETER 70 +/- 5 SHORE A

FENESTRATION TESTING LAB, INC.

LAB# 9166

DATE: 9/6/16

DRAWING VERIFIED BY: J.O.

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PROJECT CENTER SET ALUMINUM GLASS RAILING

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