



Quality Accuracy Assurance

## Fenestration Testing Laboratory, Inc.

8148 N.W. 74th Avenue Medley, FL 33166 Phone: 305/885/3328 Fax: 305/885/3329  
e-mail: ftldade@aol.com www.ftl-inc.com

Cert. No: TST1657  
Report Date: 12/7/2010  
Completion Date: 11/30/2010  
Expiration Date: 11/30/2020  
File Number: 10-541  
Page: 1  
Lab. Number: 6418  
Project Number: 10-2522

### OFFICIAL TEST REPORT

**MANUFACTURER:** Hurricanefabric.com

**SPECIFICATIONS:** ASTM E330  
ASTM E1886  
ASTM E1996

**ADDRESS:** PO Box 50153  
Clayton, MO 63105

**PROJECT:** Florida State Approval

DESCRIPTION OF SAMPLE	
Model Designation:	Series: Astro Guard Hurricane Abatement System
Overall Size of Screen:	18'-2" (218") by 7'-4" (88") high
Fabric Type:	**1680 DENIER
Mesh Construction:	**WARP and FILL COUNT: 25.0/IN
Mesh Finish:	**Resin Coated Finish
Sample A-1, A-2 and A-3	

#### Clips/Product Markings

Screen had eight anchor clips at each side of fabric. The anchor clips were fastened to the fabric using eight No. 8 by 1/2" pan head sheet metal screws. Location of anchor clips from bottom: 2", 14", 26", 38", 50", 62", 74", and 86".

Clips have product marking hurricanefabric.com.

#### Sample Installation

Sample was tested in a steel test chamber and installed onto a 3000 psi concrete beam at each side of system. Screen was installed using eight anchor clips at each side of screen and a single row of 1/4-20 by 1 1/4" side walk bolts with 2" long hurricane shutter insert anchors located 2 1/2", 14 1/2", 26 1/2", 38 1/2", 50 1/2", 62 1/2", 74 1/2" and 86 1/2" from bottom.



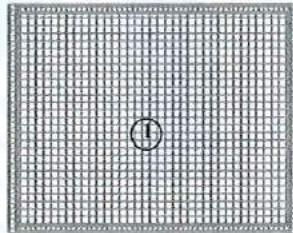
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<b>Sample: A-1</b>	<b>Temperature:</b> 73.4°F	<b>Barometric Reading:</b> 30.59 inches Hg	
<b>Title of Test</b>		<b>Pressure</b>	<b>Notes</b>
1/2 Structural Load Test Positive Load		45.0 psf	
		<b>Results</b>	Passed

<b>Sample: A-1</b>	<b>Temperature:</b> 75.6°F	<b>Barometric Reading:</b> 50.53 inches Hg	
<b>Title of Test</b>		<b>Pressure</b>	<b>Notes</b>
1/2 Structural Load Test Negative Load		45.0 psf	
		<b>Results</b>	Passed

<b>Sample: A-1</b>	<b>Temperature:</b> 73.4°F	<b>Barometric Reading:</b> 30.59 inches Hg	
<b>Title of Test</b>		<b>Pressure</b>	<b>Notes</b>
Design Load Test Positive Load		60.0 psf	

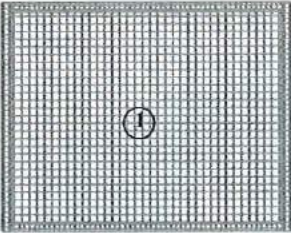


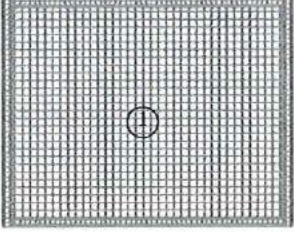
Reading#	Deflection	Permanent Set	Results	Add. Info
1	28.250"	n/a	Passed	



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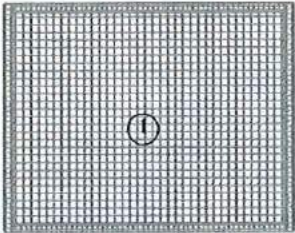
<b>Sample: A-1</b>	<b>Temperature:</b> 75.6°F	<b>Barometric Reading:</b> 30.59 inches Hg		
<b>Title of Test</b>		<b>Pressure</b>	<b>Notes</b>	
Design Load Test Negative Load		60.0 psf		
				
<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>	<b>Add. Info</b>
1	27.000"	n/a	Passed	

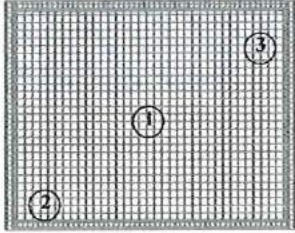
<b>Sample: A-1</b>	<b>Temperature:</b> 73.4°F	<b>Barometric Reading:</b> 30.59 inches Hg		
<b>Title of Test</b>		<b>Pressure</b>	<b>Notes</b>	
Uniform Structural Test Positive Load		90.0 psf		
				
<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>	<b>Add. Info</b>
1	34.500"	n/a	Passed	



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<b>Sample: A-1</b>	<b>Temperature:</b> 75.6°F	<b>Barometric Reading:</b> 30.59 inches Hg		
<b>Title of Test</b>		<b>Pressure</b>	<b>Notes</b>	
Uniform Structural Test Negative Load		90.0 psf		
				
<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>	<b>Add. Info</b>
1	31.000"	n/a	Passed	

<b>Sample: A-1</b>	<b>Temperature:</b> 77.9°F	<b>Barometric Reading:</b> 30.62 inches Hg			
<b>Title of Test</b>		<b>Notes</b>			
Large Missile Impact Test					
<b>Missile Weight</b>		<b>Missile</b>			
9.25 pounds		2" by 4" by 92" long			
					
<b>Impact</b>	<b>Speed</b>	<b>Orientation</b>	<b>Deflection</b>	<b>Results</b>	<b>Add. Info</b>
1	50.9 ft/sec	4.187°	14.500"	Passed	
2	50.2 ft/sec	3.338°	8.875"	Passed	
3	50.7 ft/sec	4.087°	9.250"	Passed	



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<b>Sample: A-1</b>		<b>Temperature:</b> 72.5°F		<b>Barometric Reading:</b> 30.80 inches Hg		
<b>Title of Test</b>		<b>Positive Pressure</b>		<b>Notes</b>		
Cyclic Wind Load Test		60.0 psf				
Range	Cycle	Measured	Reading#	Deflection	Permanent Set	Results
0.2-0.5	3500	2.1 sec	1	29.250"	n/a	Passed
0.0-0.6	300	2.4 sec				
0.5-0.8	600	2.0 sec				
0.3-1.0	100	2.8 sec				

<b>Sample: A-1</b>		<b>Temperature:</b> 71.6°F		<b>Barometric Reading:</b> 30.74 inches Hg		
<b>Title of Test</b>		<b>Negative Pressure</b>		<b>Notes</b>		
Cyclic Wind Load Test		60.0 psf				
Range	Cycle	Measured	Reading#	Deflection	Permanent Set	Results
0.3-1.0	50	2.8 sec	1	31.125"	n/a	Passed
0.5-0.8	1050	2.1 sec				
0.0-0.6	50	2.5 sec				
0.2-0.5	3350	2.0 sec				



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<b>Sample: A-2</b>		<b>Temperature:</b> 75.6°F		<b>Barometric Reading:</b> 30.20inches Hg	
<b>Title of Test</b>			<b>Notes</b>		
Large Missile Impact Test					
<b>Missile Weight</b>			<b>Missile</b>		
9.25 pounds			2" by 4" by 92" long		
<b>Impact</b>	<b>Speed</b>	<b>Orientation</b>	<b>Deflection</b>	<b>Results</b>	<b>Add. Info</b>
1	49.6 ft/sec	3.338°	10.250"	Passed	
2	50.2 ft/sec	4.787°	16.500"	Passed	
3	50.3 ft/sec	4.012°	9.875"	Passed	

<b>Sample: A-2</b>		<b>Temperature:</b> 75.6°F		<b>Barometric Reading:</b> 30.30inches Hg		
<b>Title of Test</b>			<b>Positive Pressure</b>		<b>Notes</b>	
Cyclic Wind Load Test			60.0 psf			
<b>Range</b>	<b>Cycle</b>	<b>Measured</b>	<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>
0.2-0.5	3500	2.1 sec	1	31.125"	n/a	Passed
0.0-0.6	300	2.5 sec				
0.5-0.8	600	1.9 sec				
0.3-1.0	100	2.9 sec				



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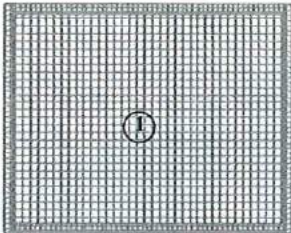
<b>Sample: A-2</b>		<b>Temperature:</b> 75.6°F		<b>Barometric Reading:</b> 30.30 inches Hg		
<b>Title of Test</b>			<b>Negative Pressure</b>		<b>Notes</b>	
Cyclic Wind Load Test			60.0 psf			
<b>Range</b>	<b>Cycle</b>	<b>Measured</b>	<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>
0.3-1.0	50	3.0 sec	1	32.500"	n/a	Passed
0.5-0.8	1050	1.8 sec				
0.0-0.6	50	2.5 sec				
0.2-0.5	3350	1.4 sec				

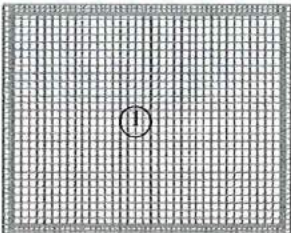
<b>Sample: A-3</b>		<b>Temperature:</b> 76.2°F		<b>Barometric Reading:</b> 30.30inches Hg		
<b>Title of Test</b>			<b>Notes</b>			
Large Missile Impact Test						
<b>Missile Weight</b>			<b>Missile</b>			
9.25 pounds			2" by 4" by 92" long			
<b>Impact</b>	<b>Speed</b>	<b>Orientation</b>	<b>Deflection</b>	<b>Results</b>	<b>Add. Info</b>	
1	50.5 ft/sec	2.925°	11.250"	Passed		
2	50.4 ft/sec	3.162°	15.875"	Passed		
3	49.5 ft/sec	3.320°	10.500"	Passed		



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<b>Sample: A-3</b>		<b>Temperature:</b> 77.9°F		<b>Barometric Reading:</b> 30.20 inches Hg		
<b>Title of Test</b>			<b>Positive Pressure</b>		<b>Notes</b>	
Cyclic Wind Load Test			60.0 psf			
						
<b>Range</b>	<b>Cycle</b>	<b>Measured</b>	<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>
0.2-0.5	3500	1.5 sec	1	31.500"	n/a	Passed
0.0-0.6	300	2.0 sec				
0.5-0.8	600	1.9 sec				
0.3-1.0	100	2.5 sec				

<b>Sample: A-3</b>		<b>Temperature:</b> 77.9°F		<b>Barometric Reading:</b> 30.20 inches Hg		
<b>Title of Test</b>			<b>Negative Pressure</b>		<b>Notes</b>	
Cyclic Wind Load Test			60.0 psf			
						
<b>Range</b>	<b>Cycle</b>	<b>Measured</b>	<b>Reading#</b>	<b>Deflection</b>	<b>Permanent Set</b>	<b>Results</b>
0.3-1.0	50	2.7 sec	1	34.750"	n/a	Passed
0.5-0.8	1050	1.9 sec				
0.0-0.6	50	2.2 sec				
0.2-0.5	3350	2.0 sec				

<b>Revision</b>	<b>Description</b>	<b>Author</b>	<b>Effective Date</b>
0	Initial Release	Mrs. Iliana Francisco	12/7/2010





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#### 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 fasteners. 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

Representative samples of the test specimens, detailed drawings and digital video disc of testing will be retained by Fenestration Testing Laboratory for a period of five years from the original test date, and test report for a period of ten years. Due to the code cycle change of four years, it is recommended that this report be evaluated during the lifespan of this document.

This product was tested in accordance with the ASTM E330-02, ASTM E1996-05, and ASTM E1886-05 with no deviations.

Testing was conducted as per instructions received from your company representative.

Witnessed by:

Mr. Jorge A. Causo, P.E.

Reviewing Engineer:

Mr. Marlin D. Brinson, P.E..

Mr. Scott Purcell, Hurricane Fabric

Technicians:

Mr. Jose Sanchez

FENESTRATION TESTING LABORATORY, INC.

**Mr. Manny Sanchez**  
Chief Executive Officer

**Frank L. Bennardo, P.E.**  
**160 SW 12<sup>th</sup> Avenue, #106**  
**Deerfield Beach, FL 33442**

Powered by the  
Innovations of



July 27, 2016

Hurricane Fabric, LLC  
1505 Poinsettia Dr., Ste. H-3  
Delray Beach, FL 33444

Regarding: Astro Guard – Wind Abatement System  
Florida Product Approval #FL17661.1  
Engineering Express Drawing #15-2452

Attention: Building Department Official

This office has reviewed engineering documents pertaining to the above referenced Florida Product Approval which is certified to the Florida Building Code Fifth Edition (2014). The intent of this letter is to certify the above mentioned product for compliance with the 2015 International Building Code. After our review this office has found that all installation criteria for this product is acceptable for use in compliance with the 2015 International Building Code.

Except as expressly provided herein, no additional certifications or affirmations are intended. Final approval shall be at the discretion of the governing authority having jurisdiction as inspection of work completed under permit has been performed by others. Unless otherwise noted herein, all installation shall follow the product approvals/installation instructions [FL17661.1], as well as the minimum requirements of the 2015 International Building Code. Thank you for your attention to this matter.

Respectfully,

Frank L. Bennardo, P.E. No. 21507  
#PE21507

16-3525

