



Quality Accuracy Assurance

## Fenestration Testing Laboratory, Inc.

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Cert. No: TST1657  
Report Date: 12/7/2010  
Completion Date: 11/30/2010  
Expiration Date: 11/30/2020  
File Number: 10-541  
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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.

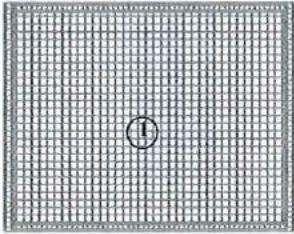


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|  |                            |  |              |
|--|----------------------------|--|--------------|
| <b>Sample: A-1</b>                     | <b>Temperature:</b> 73.4°F | <b>Barometric Reading:</b> 30.59 inches Hg |              |
| <b>Title of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

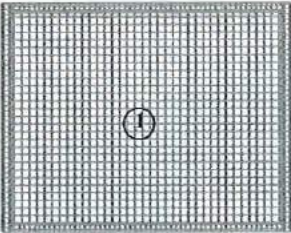
|  |                            |  |              |
|--|----------------------------|--|--------------|
| <b>Sample: A-1</b>                     | <b>Temperature:</b> 75.6°F | <b>Barometric Reading:</b> 50.53 inches Hg |              |
| <b>Title of Test</b>                   |                      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

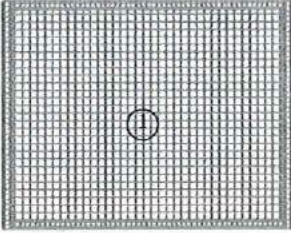
|   |                            |  |                |                  |
|---|----------------------------|--|----------------|------------------|
| <b>Sample: A-1</b>  | <b>Temperature:</b> 73.4°F | <b>Barometric Reading:</b> 30.59 inches Hg |                |                  |
| <b>Title of Test</b>  |                            | <b>Pressure</b>                            | <b>Notes</b>   |                  |
| Design Load Test Positive Load  |                            | 60.0 psf                                   |                |                  |
|  |                            |  |                |                  |
| <b>Reading#</b>   | <b>Deflection</b>          | <b>Permanent Set</b>                       | <b>Results</b> | <b>Add. Info</b> |
| 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         |                  |

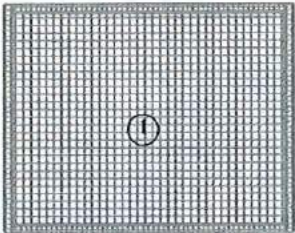
|   |                            |  |                |                  |
|---|----------------------------|--|----------------|------------------|
| <b>Sample: A-1</b>  | <b>Temperature:</b> 73.4°F | <b>Barometric Reading:</b> 30.59 inches Hg |                |                  |
| <b>Title of Test</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         |                  |

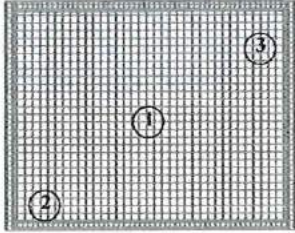




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|---|----------------------------|--|----------------|------------------|
| <b>Sample: A-1</b>  | <b>Temperature:</b> 75.6°F | <b>Barometric Reading:</b> 30.59 inches Hg |                |                  |
| <b>Title of Test</b>  |                            | <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         |                  |

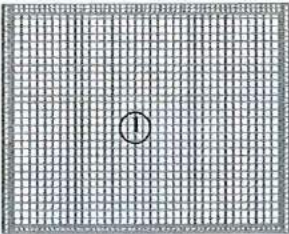
|                       |                            |   |                 |                   |                      |                |
|-----------------------|----------------------------|---|-----------------|-------------------|----------------------|----------------|
| <b>Sample: A-2</b>    | <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                                   |                 |                   |                      |                |

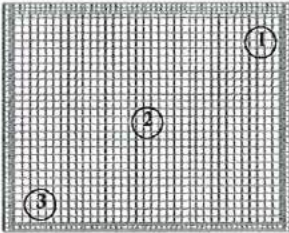




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| <b>Sample: A-2</b>  |       | <b>Temperature:</b> 75.6°F |                          | <b>Barometric Reading:</b> 30.30 inches Hg |               |         |
|---|-------|----------------------------|--------------------------|--|---------------|---------|
| <b>Title of Test</b>  |       |                            | <b>Negative Pressure</b> |  | <b>Notes</b>  |         |
| Cyclic Wind Load Test   |       |                            | 60.0 psf                 |  |               |         |
|  |       |                            |                          |  |               |         |
| Range   | Cycle | Measured                   | Reading#                 | Deflection                                 | Permanent Set | Results |
| 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                    |                          |  |               |         |

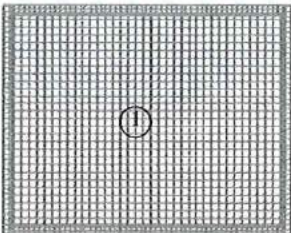
| <b>Sample: A-3</b>  |             | <b>Temperature:</b> 76.2°F |                      | <b>Barometric Reading:</b> 30.30inches Hg |           |  |
|---|-------------|----------------------------|----------------------|---|-----------|--|
| <b>Title of Test</b>  |             |                            | <b>Notes</b>         |   |           |  |
| Large Missile Impact Test   |             |                            |                      |   |           |  |
| <b>Missile Weight</b>   |             |                            | <b>Missile</b>       |   |           |  |
| 9.25 pounds   |             |                            | 2" by 4" by 92" long |   |           |  |
|  |             |                            |                      |   |           |  |
| Impact  | Speed       | Orientation                | Deflection           | Results                                   | Add. Info |  |
| 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