

Unique Engineering Solutions, LLC

4177 Corporate Court
Palm Harbor, FL 34683

Product Evaluation Report

Date: April 24, 2015

Report No.: 215001

Report Revision No.: 0

Project No.: 215-015

Code Compliance: Florida Building Code 2010, including HVHZ

Product Mfg.:
Door Engineering and Manufacturing
400 West Cherry, Street
Kasota, Minnesota 56050

Product Name(s): Hurricane Four Fold Door

Product Category: Exterior Doors

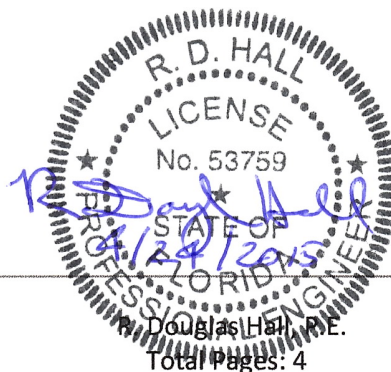
Product Sub-Category: Sectional Exterior Door Assemblies

Compliance Method: Product Approval Rule 61G20-3.005 – Product Evaluation Report by a Licensed Professional Engineer, Method 1D

Prepared By:
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CERTIFICATE OF INDEPENDENCE

Unique Engineering Solutions, LLC and R. Douglas Hall, P.E. do not have, nor will acquire, any financial interest in the company manufacturing or distributing product(s) covered by this Product Evaluation Report Unique Engineering Solutions, LLC and R. Douglas Hall, P.E. do not have, nor will acquire any financial interest in any other entity involved in the approval process or testing of the product(s) covered by this Product Evaluation Report.



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1.0 Project Scope

Evaluate Door Engineering and Manufacturing, sectional exterior door for conformance to the 2010 Florida Building Code – Building and Residential Volumes excluding the High Velocity Hurricane Zone (HVHZ) Use, Compliance with TAS 201, TAS 202 AND TAS 203.

The engineering analysis (Reference 2.a) determines the anchorage of the product to the supporting substrate and the product evaluation report (this document) summarizes 2010 FBC compliance verification and appropriate Limitations and Conditions of Use.

2.0 Description of Product – Installation Requirements

See Reference 1 for a description of the product, its installation and other pertinent data related to its approved use.

3.0 Limitations and Conditions of Use

This product evaluation report contains or makes reference to specifications, technical details and installation details and/or methods that pertain to the proper use and/or installation of the product specified herein. Specific limitations and conditions of its use including but not limited to the following are contained in Reference 1 and are the subject of Product Approval in accordance with the State of Florida Product Approval Rule 61G20-3.

- Design Pressure Rating (psf)
- Installation substrate requirements.
- Installation anchor requirements.
- Installation restrictions.
- Product description.
- Product components.

4.0 Applications/Installations outside the Limitations and Conditions of Use of this Product's Approval

Rule 61G20-3.005(1)(e) states “Rational engineering analysis cannot be used in lieu of a standard test required by the Code for approval of products within the scope of the standard, except that project specific approval by the local authorities having jurisdiction in accordance with alternate methods and materials authorized in the Code.”

Any modification to this product as evaluated in this report and approved by the Florida Building Commission is outside the scope of this evaluation and will be the responsibility of others. As allowed in Rule 61G20-3.005(1)(e), a project specific approval by the local authorities having jurisdiction may be used given an appropriate rational analysis is conducted and deemed acceptable to the local authorities having jurisdiction.

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5.0 Quality Assurance

This product is manufactured under a quality assurance program audited by an approved Certification and Quality Assurance Entity **Keystone Certifications, Inc., (KCI)** as required in Rule 61G20-3.005(3). See FBC Organization No. QUA1673 for approval under Rule 61G20-3.

6.0 Code Conformance –Structural Performance

Reference 2.a conducted testing to the following standard(s). See Reference 3.b for Code Conformance Evaluation to the 2010 FBC for these testing standards as applicable.

1. TAS 201-94, Impact Test Procedures
2. TAS 201-94, Criteria for Testing Impact & Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure
3. TAS 203-94, Criteria for Testing Products Subject to Cyclic Wind Pressure Loading

7.0 Design Pressure Limitations

From Reference 2.a.i (structural) on the Four Fold Door System:

- Design Pressure: +120/-120 psf
- Max Product Size 192" x 192"
- Max Panel Size 47" x 190-1/2"
- Max Daylight Opening 30-1/4" x 117-1/2" Single Opening
- Max Daylight Opening 2 - 30-1/4" x 75-1/2" Double Opening
- Glazing Option – 6mm Tempered Glass/11mm air space/6mm Heat Strengthened Glass/0.090" DuPont Sentry Glass Plus™ Interlayer/6mm Heat Strengthened Glass (Dry Glaze)
- Glazing Option – 6mm Heat Strengthened Glass/0.090" DuPont Sentry Glass Plus™ Interlayer/6mm Heat Strengthened Glass (Dry Glaze)

7.1 Anchorage Substrate Assumptions

- Wood-SYP (G=0.55 or better)
- Light Gage Steel (Fy=33 ksi or better), minimum 18 gage
- Normal Weight Concrete f'(c)=3000 psi or better
- Grout Filled CMU, min. 1800 psi grout (reinforced cells)
- Structural steel (min. 36 ksi)
- Any welded connections shall be done with E70xx, electrodes

Note: Suitable substrate by others

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8.0 Performance and Testing Standards

Reference 2.a conducted structural testing to the following standard(s). See Reference 3.b for Code Conformance Evaluation to the 2010 FBC for these testing standards as applicable.

1. TAS 201-94, Impact Test Procedures
2. TAS 201-94, Criteria for Testing Impact & Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure
3. TAS 203-94, Criteria for Testing Products Subject to Cyclic Wind Pressure Loading

9.0 References and Supporting Documents

1) Drawings and Installation Manual

- a. Four-Fold Door System Installation Guide *-signed and sealed by R. Douglas Hall, P.E. on 04/24/2015*
- b. Installation Drawings FF700 Sheets 1-3 & FF700XT Sheets 1-3, *Signed and Sealed by R. Douglas Hall, P.E. on 04/24/2015*

2) Testing

a. Performance Testing

- i. Intertek/Architectural Testing, Inc. (Schofield, WI) Report No. E1864.02-602-18 signed and sealed by Shawn G. Collins, P.E.

3) Reports

- a. Anchorage Engineering Calculations, Dated 04/24/2015, signed and sealed by R. Douglas Hall, P.E.
- b. Unique Engineering Solutions, LLC - Report No. 215001, Rev. 0, Door Engineering & Manufacturing, *Hurricane Four Fold Door –04/24/2015*, signed and sealed by R. Douglas Hall, P.E.

4) 2010 Florida Building Code & 2010 Florida Residential Code

a. Testing and Labeling Requirements

- i. Section 1715.5.3.1 – Test Procedure
- ii. Section 1715.5.3.4 – Testing and Labeling of Garage Doors
- iii. Section R612.8.2.6.9 – Test Procedure
- iv. Section R612.8.5 Garage Door Labeling