

**PRODUCT**            **ForceFront Storm Entrance Series**  
 Standard and Monumental – medium and wide

**TEST RESULTS**

Air Infiltration	<i>ASTM E283</i>	<b>1.0 cfm/ft<sup>2</sup> @ 1.57 psf</b>
Structural – Design Load	<i>ASTM E330, TAS 202</i>	<b>up to +/- 70 psf</b>
Structural – Overload	<i>ASTM E330, TAS 202</i>	<b>up to +/- 105 psf</b>
Forced Entry	<i>AAMA 1304</i>	<b>300 lb point load</b>
Hurricane Impact and Cycling	<i>ASTM E 1996 ASTM E 1886 TAS 201, TAS 203</i>	<b>C, D, and E missile up to +/- 70 psf</b>
State Product Approvals	<i>FLORIDA TEXAS</i>	<b>FL #29696 pending</b>

**TEST LAB**

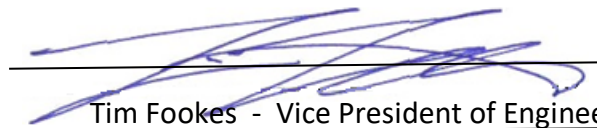
**Quast Testing and Consulting (QCT)**

*Mosinee, WI 54455*

Report Number	QCT18-4953.01-R1
Test Date	12/27/2011 – 5/30/2012
Report Date	6/28/2012

Reference report in above table and state product approvals for complete test specimen description and approved product applications. Contact a Tubelite representative for more information.

Tubelite Representative:

 (sign) 4/19/2019 (date)  
Tim Fookes - Vice President of Engineering (title)

## TEST METHODS

**Air Infiltration:** *ASTM E283-04, Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.* Testing was conducted at 1.57 psf positive static air pressure difference.

**Structural Performance:** *ASTM E330-14, Standard Test Method for Structural Performance of Exterior Windows, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.* Testing was conducted up to +/- 70 psf design loads and +/- 105 psf overloads. Allowable Criteria: Design - L/175 deflection normal to wall plane for clear spans up to 13'-6". Overload – net permanent set shall not exceed 0.2% of the clear span.

**Forced Entry:** *AAMA 1304-02, Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.* Specimens tested using a 300lb point load.

**Florida Building Code TAS 201-94:** *Impact Test Procedures.* Missile Types C, D, and E

**Florida Building Code TAS 202-94:** *Criteria for Testing Impact and Non Impact Resistant Building Envelope Components Using Uniform Static Air Pressure.* Pressure cycling up to +/- 70 psf.

**Florida Building Code TAS 203-94:** *Criteria for Testing Products Subject to Cyclic Wind Pressure Loading*

**ASTM E 1996-17:** *Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.* Missile Types C, D, and E. Pressure cycling up to +/- 70 psf.

**ASTM E 1886-13a:** *Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.* Missile Types C, D, and E. Pressure cycling up to +/- 70 psf.