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PRODUCT EVALUATION REPORT

REPORT NO.: 23-0721.29

DATE: July 21, 2023

PRODUCT CATEGORY: Hurricane Shutters

PRODUCT SUB-CATEGORY: Accordions

PRODUCT NAME: BERTHA H.V. ACCORDION SHUTTER
SYSTEM (HV BLADE # 3 W/ OR W/O HV
WINDOW BLADE # 3)

SUBMITTED BY: American Shutter Systems Association, Inc
4268 Westroads Drive
West Palm Beach, Florida 33407

1. PURPOSE OF EVALUATION:

This is a Product Evaluation Report issued by **Walter A. Tillit, Jr., P.E.** (System ID # 1906) as a Revision to FL 389-R5 to the **American Shutter Systems Association, Inc. (A.S.S.A.)**, based on **Rule Chapter No. 61G20-3, Method 1d of the Florida Department of Business and Professional Regulation.**

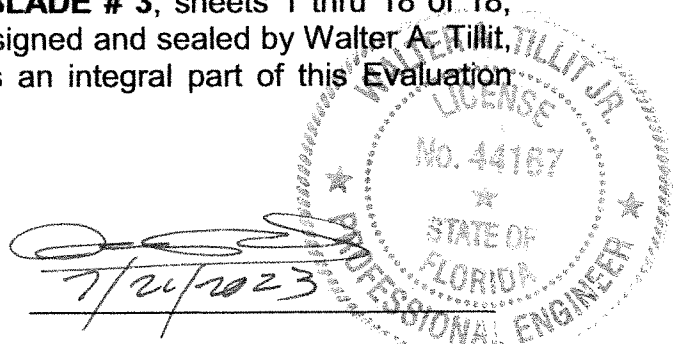
This product is being issued an Evaluation Report as described herein, and has been verified for compliance in accordance with the 2023 8th Edition of the Florida Building Code, and to verify that the product is for the purpose intended at least equivalent to that required by the Code.

This Product Evaluation Report shall be subject to review and revision in case of a Building Code change that may affect its limitations and conditions.

2. EVIDENCE SUBMITTED:

2.1. PRODUCT EVALUATION DOCUMENT (P.E.D.):

Drawing No. 23-133, titled "**BERTHA H.V. ACCORDION SHUTTER SYSTEM**", **HV BLADE #3 W/ OR W/O HV WINDOW BLADE # 3**, sheets 1 thru 18 of 18, including 3A, 10A, prepared by Tilteco, Inc.; signed and sealed by **Walter A. Tillit, Jr., P.E.**; dated 07/21-2023. This drawing is an integral part of this Evaluation Report.



2.2. TEST REPORTS:**For HV Blade # 3**

Large missile impact and cyclic Loadings under ASTM E 1886 and ASTM E 1996 as well as Protocols TAS 201 and 203, as per section 1609.1.2 of the Florida Building Code. Uniform Static loads in accordance with Protocol TAS 202 and ASTM E 330-02 Test reports prepared by American Testing Lab of South Florida, Reports No. 0403.01-08 dated September 5, 2008 and 0403.01-08 (addendum), dated October 17, 2008 signed and sealed by William R. Mehner, P.E., and Henry Hatten, P.E., and report # 0825.01-10 (addendum to 403.01-08), dated October 7, 2010 signed and sealed by Julio E. Gonzales P.E. report # 1220.01-10 dated February 1, 2011 signed and sealed by Julio E. Gonzales P.E.

Addendum # 2 to American Testing Lab of South Florida Report # 0403.01-08 (revision # 1) dated 2/14/14, Addendum # 2A to American Testing Lab of South Florida Report # 0403.01-08, dated 2/14/14, addendum # 1 to American Testing Lab of South Florida Report # 0825.01-10, dated 2/13/14, Addendum # 1 to American Testing Lab of South Florida Report # 0829.01-08, dated 2/13/14, signed and sealed by Mr. Stephen W. Walter, P.E.

Report # 0422.02-14, dated 4/30/14, signed and sealed by Mr. Stephen Walter, P.E.

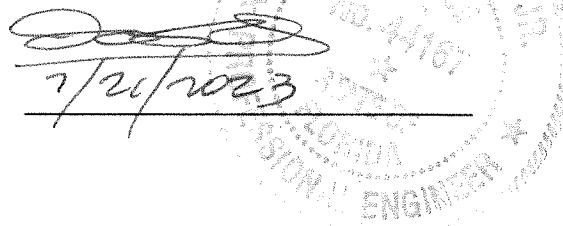
Tensile test as per QC Metallurgical Report No. 8GM-692 dated July 21, 2008 signed and sealed and Report # 8JM-1019, dated October 22, 2008 signed and sealed by Frank E. Grate Jr., P.E., as per ASTM E 8. Report No. 0825.01-10 dated 10/06/2010, signed and sealed by Frank E. Grate Jr., P.E., per ASTM E-8.

Tensile Test as per QC Metallurgical report # 11AM-09 dated January 11, 2011 signed and sealed by Frank Grate Jr. P.E. as per ASTM E8 and report # 11AM-40 dated January 17, 2011, signed and sealed by Frank Grate Jr, P.E. as per ASTM E-8

Tensile Test per ASTM F606 on stainless steel machine screw pins, as per Hurricane Engineering and Testing Inc. Report # HETI-14-T300, dated February 17, 2014, signed by Dr. Nasreen K. Ali.

For HV Window Blade #3

Large missile impact and cyclic loading under TAS 201 and 203 and ASTM E - 1996 and ASTM E 1886, as per section 1609.1.2 of the Florida Building Code. Uniform Static Loads in Accordance with protocol TAS 202 and ASTM E-330-02. Test reports prepared by American Testing Lab of South Florida, report # 0829.01-08 dated October 17, 2008 signed and sealed by William R. Mehner, P.E., and Henry Hatten P.E. Testing for


7/21/2023
The stamp is circular with the text "PROFESSIONAL ENGINEER" around the perimeter. Inside the circle, the number "10,44167" is visible, along with the word "FLORIDA" and a star.

Polycarbonate Bayer Markrolon 3103 for fire burning characteristics, per sections 2601, 2602, 2607 and 2615 of the Florida Building Code, per ETC Laboratories report # ETC -07-1095-19015.1, dated 12/14/07, signed and sealed by Joseph Labora Doldan P.E.

Testing for Polycarbonate Bayer Markrolon 3103 for Weathering / (UV exposure) per ASTM G-155 and ASTM D-638, per section 2615 of the Florida Building Code, per ETC Laboratories report # ETC-07-1095-19015.1, dated 12/14/07, signed and sealed by Joseph Labora Doldan P.E.

Tensile test as per QC metallurgical Report # 8JM-1020, dated October 22, 2008, signed and sealed by Frank E. Grate P.E. as per ASTM E 8

Qualifications for Sabic Innovative Plastic Polycarbonate with resin 103, equivalent as per letter issued by Sabic, dated 7/17/08, addressed to Eastern Metal Supply Inc. to approved # 9034 sheet grade with Miami Dade County Approval addressing the burning characteristics, weathering and structural (mechanical) properties.

2.3. STRUCTURAL ENGINEERING CALCULATIONS:

On Bertha H.V. Accordion Shutter System for maximum shutter span vs. design wind load, as well as maximum anchor spacing vs. design wind load and shutter span based on rational and comparative analysis, and in accordance with section 1604 of the Florida Building Code. Calculations prepared by Tilteco, Inc., July 31, 2006, May 23, 2008, July 1, 2011, October 27, 2010 April 27, 2011 and August 8, 2011 signed and sealed by Walter A. Tillit, Jr., P.E. New Revision Calculations prepared for load and span reduction based on 27.1ksi Yield Strength versus 29.8ksi, dated 4/4/2013 and 4/19/2013, signed and sealed by Walter A. Tillit Jr., P.E.

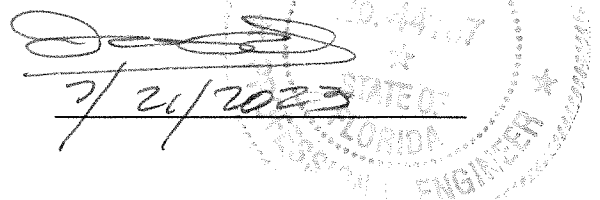
3. MISSILE IMPACT RESISTANCE:

Large missile impact under section 1609.1.2 of The Florida Building Code, as per ASTM E 1886-05 and ASTM E 1996, as well as Protocol TAS 201 (for HV blade 3as well as HV Window Blade #3).

4. WIND LOADS RESISTANCE:

Accordion Shutter System has been verified to sustain wind pressures. Maximum Shutter Span for HV Blade #3 shall be as indicated on sheet 5 of 18 of product Evaluation Document (P.E.D.), Drawing # **23-133**. Maximum anchor spacing shall be as indicated on sheet 6, 7 and 8 of 18 of product Evaluation Document (P.E.D.) drawing # **23-133** Maximum Anchor Spacing Shall be indicated on sheet 18 of drawing No. **23-133**.

Accordion Shutter System with HV Blades # 3 with or without HV Window Blade # 3 has been verified for code compliance to work as a non – porous storm shutter assembly, as per section 3.3.2.7 of ASTM E 1996 Standard.


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ENGINEER

5. INSTALLATION:

For HV Blade 3 Shall be performed strictly in accordance with the details indicated on sheets 4, 9 thru 16 of 18 including 10A of Product Evaluation Document (P.E.D.), drawing No. **23-133**. Minimum separation to glass shall be as indicated on sheets 5 of 18 of Product Evaluation Document (P.E.D.), drawing No. **23-133**.

Requirements for use of locks and/or locking rods shall be as indicated on Notes 4 of 18 and note 9 on sheet 1 of 18 of Product Evaluation Document (P.E.D.), drawing No. **23-133**.

The HV Blade # 3 Working in unison with HV Blade #3 shall be performed strictly in accordance with limitations included on sheet 18 of drawing # **23-133**. Minimum separation to glass shall be as indicated on sheet 19 of drawing # **23-133**

6. MATERIAL CHARACTERISTICS AND SPECIFICATIONS:

Shall be strictly in accordance with General Notes and Components indicated on sheets 1 through 6 of 18 of Product Evaluation Document (P.E.D.), drawing No. **23-133**. Anchor specifications for HV Blade 3 with or without HV Window Blade #3 shall be as indicated on sheets 6, 7, 8 and 10 of 18 of Product Evaluation Document (P.E.D.), drawing No. **23-133**.

7. LIMITATIONS AND CONDITIONS OF USE:

7.1. Shall be strictly in compliance with General Notes No. 1, 8, 9, 10, 11 and 12 Indicated on sheet 1 of 18, of Product Evaluation Document (P.E.D.), drawing No. **23-133** prepared by Tilteco, Inc. and signed and sealed by Walter A. Tillit, Jr., P.E.

7.2. Product **shall not be** installed within HIGH VELOCITY HURRICANE ZONES as defined on section 202 of the Florida Building Code.

7.3. Product shall only be installed into poured concrete, concrete block, wood frame structures, and Metal stud walls.

Product Evaluation Report prepared by Walter A. Tillit, Jr., P.E. (Florida License No. 44167), President of Tilteco, Inc. (Florida CA-0006719).


7/24/2023

