# Product Evaluation Report

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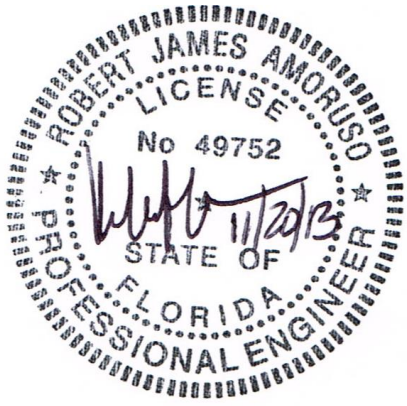
| Date: | November 20, 2013 |
| Report #: | 2263 |
| Report Revision No.: | 0 |
| Project #: | 413-1003 |
| Product Mfg.: | Jeld-Wen Inc.<br>3737 Lakeport Boulevard<br>Klamath Falls, OR 97601 |
| Product Description: | Clipped Aluminum Tube Mullion – LMI/SMI – HVHZ |
| Product Category: | Windows |
| Product Sub-Category: | Mullions |
| Compliance Method: | Product Approval Rule 61G20-3.005(1)(d) – Product Evaluation Report by a Licensed Professional Engineer |
| Prepared By: | Robert J. Amoruso, P.E.<br>Florida P.E. No. 49752<br>PTC Product Design Group, LLC, PO Box 520775, Longwood, FL 32752-0775<br>Florida C of A No. 25935 |

**CERTIFICATE OF INDEPENDENCE**

PTC Product Design Group, LLC and Robert J. Amoruso, 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.

PTC Product Design Group, LLC and Robert J. Amoruso, 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.



## SCOPE

Evaluate Jeld-Wen Clipped Aluminum Tube Mullion – LMI/SMI – HVHZ for conformance to the Current Edition of the Florida Building Code – Building and Residential Volumes including the High Velocity Hurricane Zone (HVHZ).

The engineering analysis (Reference 3) determines the anchorage of the product to the supporting substrate and mullion to span design pressures for various window combination assemblies. The product evaluation report (this document) summarizes Current Edition FBC and Current Edition FRC code compliance verification and appropriate Limitations and Conditions of Use.

## DESCRIPTION OF PRODUCT – INSTALLATION REQUIREMENTS

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

## CODE CONFORMANCE

This product is designed to comply with the Current Edition of the Florida Building Code (FBC) and Current Edition of the Florida Residential Code (FRC) requirements including the High Velocity Hurricane Zone (HVHZ). The specific Current Edition Florida Building Code (FBC) and Current Edition Florida Residential Code (FRC) requirements that have been met by testing and/or engineering evaluation (rational analysis) are the following.

See Equivalency Evaluation to the Current Edition FBC (Reference 1.b) for evaluation of testing standards compliant with the Current Edition FBC and Current Edition FRC.

- Current Edition Florida Building Code (FBC), Building Volume
    - Protection of Openings
    - High Velocity Hurricane Zones - Impact Tests for Wind-Borne Debris
    - Mullions occurring between individual window and glass door assemblies
    - Anchorage methods
- Current Edition Florida Building Code (FBC), Residential volume
    - Protection of Openings
    - High Velocity Hurricane Zones - Impact Tests for Wind-Borne Debris
    - Mullions
    - Anchorage methods

## LIMITATIONS AND CONDITIONS OF USE

This product evaluation 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 may include but are not limited to the following contained in Reference 1.a 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.

## QUALITY ASSURANCE

This product is manufactured under a quality assurance program audited by an approved Certification and Quality Assurance Entity **Window and Door Manufacturers Association (WDMA)** as required in Rule 61G20-3.005(3). See FBC Organization No. CER1508 and QUA2515 for approval under Rule 61G20-3.

## APPLICATIONS/INSTALLATIONS OUTSIDE THE LIMITATIONS AND CONDITIONS OF USE

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.

## PERFORMANCE AND TESTING STANDARDS

Reference 2 conducted testing to the following standard. See Equivalency Evaluation to the Current Edition FBC (Reference 1.b) for evaluation of testing standards compliance with the Current Edition FBC and Current Edition FRC.

1. TAS201-94, Impact Test Procedures.
2. TAS202-94, Criteria for Testing Impact & Non-Impact Resistant Building Envelope Components Using Uniform Static Air Pressure.
3. TAS203-94, Criteria for Testing Products Subjected to Cyclic Wind Pressure Loading.

## REFERENCES & SUPPORTING DOCUMENTS

1. Drawing
    a. JELD0108, Rev. 0, dated 11/20/13, signed and sealed by Robert J. Amoruso, P.E. *Jeld-Wen Clipped Aluminum Tube Mullion, Large and Small Missile Impact Resistant - HVHZ, Mullion Span vs. Load Width Tables - Installation Anchorage Details*

2. Test Reports by National Certified Testing Laboratory, Inc. in Orlando, FL
    a. No. NCTL-210-3383-2, dated 10/22/07, TAS 201, 202 and 203 testing for Jeld-Wen LMI Mullion
    b. No. NCTL-210-3383-2A, dated 6/28/10, TAS 201, 202 and 203 testing for Jeld-Wen LMI Mullion

3. PTC Product Design Group, LLC
    a. Engineering Analysis
        i. Report No. 2264, Load Width vs. Mull Span and Installation Anchorage Analysis
        ii. Report No. 438, Vertical 1x3 Mullion and Goal Post Clip Structural Analysis
        iii. Report No. 439, Vertical 1x3 Mullion and T-Clip Structural Analysis
        iv. Report No. 440, Vertical 1x4 Mullion and Goal Post Clip Structural Analysis
        v. Report No. 441, Vertical 1x4 Mullion and T-Clip Structural Analysis
        vi. Report No. 639, Vertical 1x4 Mullion and T-Clip Structural Analysis
        vii. Report No. 640, Vertical 1x4 Mullion and Goal Post Clip Structural Analysis
        viii. Report No. 643, Horizontal 1x4 Mullion and T-Clip Structural Analysis
        ix. Report No. 644, Horizontal 1x4 Mullion and Goal Post Clip Structural Analysis
    b. Engineering Evaluation
        i. PTC Report No. 2263-EER, Rev. 0, dated 11/20/13, Equivalency Evaluation for Jeld-Wen Clipped Aluminum Tube Mullion, Large and Small Missile Impact Resistant - HVHZ, Mullion Span vs. Load Width Tables - Installation Anchorage Details, signed and sealed by Robert J. Amoruso, P.E.

4. Florida Building Code
    a. Current Edition Florida Building Code (FBC), Building Volume
        i. Protection of Openings
        ii. High Velocity Hurricane Zones - Impact Tests for Wind-Borne Debris
        iii. Mullions occurring between individual window and glass door assemblies
        iv. Anchorage methods
    b. Current Edition Florida Building Code (FBC), Residential volume
        i. Protection of Openings
        ii. High Velocity Hurricane Zones - Impact Tests for Wind-Borne Debris
        iii. Mullions
        iv. Anchorage methods

5. AAMA 103, Procedural Guide – AAMA Certification Program
    a. AAMA 103.3-93
    b. AAMA 103-04
    c. AAMA 103-07

6. AAMA 203, Procedural Guide – WINS
    a. AAMA 203-98
    b. AAMA 203-03