TAPPANA ONDRICK
STRUCTURAL ENGINEERS

ENGINEER'S COMPARATIVE ANALYSIS REPORT DATED 11/6/07:

EFCO Corporation
1000 County Road
Monett, MO 65708
Phone: (417) 235-3193; Fax (417)235-7313

Product model & name: Series 511 Casement Window

Documents that must accompany this report:

1. Tappana Ondrick drawing #07-155.11 and fastener calculation package.

Window construction/installation:

Frame construction: Frame member (EF29) and sash member (6468) are formed of extruded 6063-T6 aluminum with wall thickness = .125" and an overall depth of 2 1/2". Frame corners are mortise and Tenon construction. Sash corners are miter cut, angled reinforced using a corner key (Part# KK08), and epoxy welded and crimped.
Glass: 1-1/4" HRG-2 Insulated Laminated Glass provided by Viracon. ¼" heat strengthened glass – 7/16" air space – 3/16" heat strengthened glass - .050" polyurethane - .080" polycarbonate - .050 polyurethane - 3/16" heat strengthened glass.
Glazing: Interior glazed with Bondaflex Structural Silicone Sealant and Santoprene bulb weatherstrip with the glazing stop mechanically attached with #8 x ¾" Tek screws located 3" from the ends and 16" o.c. The exterior is glazed using Bondaflex Structural Silicone Sealant.
Installation: To be in accordance with Tappana Ondrick drawing #07-155.11

Hardware: N/A

Window size and design pressure restrictions: 48" x 72" at a design pressure of +/-100 psf.

FBC Section 1707 materials and assembly tests performed:

Test Standards:

ASTM E283 (Air Infiltration)
ASTM E331 (Water Resistance)
ASTM F588 (Forced Entry)
ASTM E330 (Uniform Deflection)
ASTM 1886/1996 (Large Missile Impact)
TAS 201, 202, 203

Test laboratory: Hurricane Test Laboratory, LLC
1701 West Fork Dr., Suite 106
Lithia Springs, GA 30122

Test Report numbers and dates:

G046-0503-07 (48" x 72" window to +/-100 psf.) dated 5/14-5/18/07.

TAPPANA ONDRICK
STRUCTURAL ENGINEERS

General report notes:

1. All size and installation conditions shown in this report are based off of referenced test report and/or engineering analysis in accordance with the Florida Building Code.
2. Windows shall be constructed in accordance with the descriptions in this report, the applicable test report and the manufacturer's state approved quality assurance entity specifications.
3. This product is approved for use in High Velocity Hurricane Zones (HVHZ)
4. Job required wind pressures shall be calculated in accordance with Florida Building Code Chapter 16 and ASCE 7 Minimum Design Loads for Buildings and Other Structures.

Impact Certification:

These windows are large missile impact rated.

Certification of Independence:

Tappana Ondrick Structural Engineers and Craig Ondrick, P.E., do not have nor will acquire, a financial interest in any company manufacturing or distributing products nor any other entity involved in the approval process for which this product report is issued.

Applicable Codes and Standards:

- Section 1707.4 of the Florida Building Code
- ASTM E1300
- ANSI/AAMA/NWWDA 101/IS2-97
- AA Specifications for Aluminum Structures, Aluminum Design Manual, 2000

Quality Assurance Entity: (ATI) Architectural Testing, Inc., York, PA

Craig Ondrick, P.E.
Florida P.E. #57270

12/17/07

Phone (417) 673-0463 1968 S. Hall, Webb City, MO 64870 Fax (417) 673-0465