**General notes**

**Issue/Complaint/ Ms. Yiping Wang:**

* The window wall system in HVHZ not only should pass TAS 201, 202 & 203 but also the glass should also be in compliance with ASTM E1300.
* From all above (see comments provided), we can see that the center glass capacity in Florida approval FL#15709 do not meet the ASTM E1300 and Florida Building Code requirements.
* I strongly recommend that Florida Building Code Commission review this Florida Approval FL#15709 and have it corrected.

**Response/Lynn Miller:**

* Yiping states that I have not provided calculations.  That is simply not the case.  I have provided calculations to my 3rd Party Technical validator as required by Section 2 (a) of 61G20-3.005.
* I don’t believe the product approval rule requires a non-independent evaluation entity (like me) to submit calculations to anyone other than the technical validator.  Please let me know if that is not a true statement.
* Also, I must reiterate that this is NOT a safety issue as these systems have been fully tested to TAS 201/202/203 as required by the FBC for the HVHZ.  If the products did not pass these tests, I would agree that this is a public safety issue, but that is simply not the case.

**Code edition:** 7th Edition (2020) Florida Building Code

**Application: FL 15709-R11 (Approved)**

Manufacturer: WinDoor Inc.

Category of product: Windows

Subcategory: Fixed

Limits of Use: Approved for use in HVHZ and Non-HVHZ

Impact Resistant

Design Pressure Rating: 90 PSF

Description: Seamless, 7/8” Triple glazed with opt. SmartFilm Window System

Compliance test standards: (TAS 201, 202, 203, AAMA A440, ASTM E1886, and ASTM E1996)/ as required by the FBC

**Testing**: By Fenestration Testing Laboratories/QAI Laboratories Inc./Commission approved labs

 Quality Assurance Entity: Keystone Certifications, Inc.

Validation entity: Steven M. Urich, PE.

Compliance Method: Evaluation Report from a Florida Registered Architect or a licensed Florida Professional Engineer

Evaluation Engineer: Lynn Miller, P.E.

Glass Type 2: ¼” HS Glass + 0.090 SG Interlayer + ¼” HS Glass + 0.045” EVA Interlayer + 0.062” Smartfilm + 0.045” EVA Interlayer + ¼” HS Glass

**7th Edition (2020) Florida Building Code – Building “the Code” – code related sections:**

**SECTION 2404 WIND, SNOW, SEISMIC AND DEAD LOADS ON GLASS**

**2404.1 Vertical glass.** Glass sloped 15 degrees (0.26 rad) or less from vertical in windows, curtain and window walls, doors and other exterior applications shall be designed to resist the wind loads due to ultimate design wind speed, *Vult,* in Section 1609 for components and cladding. Glass in glazed curtain walls, glazed storefronts and glazed partitions shall meet the seismic requirements of ASCE 7, Section 13.5.9. The load resistance of glass under uniform load shall be determined in accordance with ASTM E1300.

**2404.4 Other designs.** For designs outside the scope of this section, an analysis or test data for the specific installation shall be prepared by a *registered design professional*.

**1708.2 Test standards.** Structural components and assemblies shall be tested in accordance with the appropriate referenced standards. In the absence of a standard that contains an applicable load test procedure, the test procedure shall be developed by a *registered design professional* and *approved*. The test procedure shall simulate loads and conditions of application that the completed structure or portion thereof will be subjected to in normal use.

**1709.5.1 Exterior windows and doors.** Exterior windows and sliding doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or TAS 202 (HVHZ shall comply with TAS 202 and ASTM E1300 or Section 2404). Exterior side-hinged doors shall be tested and *labeled* as conforming to AAMA/WDMA/CSA101/ I.S.2/A440 or comply with Section 1709.5.2. Products tested and *labeled* as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 shall not be subject to the requirements of Sections 2403.2 and 2403.3.

**1609.1.2 Protection of openings.** In *wind-borne debris regions*, glazed openings in buildings shall be impact

resistant or protected with an impact-resistant covering meeting the requirements of ANSI/DASMA 115 (for

garage doors and rolling doors) or TAS 201, 202 and 203, AAMA 506, ASTM E1996 and ASTM E1886 referenced

herein, or an approved impact-resistant standard as follows: …

**TESTING APPLICATION STANDARD (TAS) 202-94**

**CRITERIA FOR TESTING IMPACT & NONIMPACT RESISTANT**

**BUILDING ENVELOPE COMPONENTS USING UNIFORM STATIC AIR PRESSURE**

**Scope:**

1.1 This protocol covers procedures for conducting a uniform static air pressure test for materials

and products such as wall cladding, glass block, exterior doors, garage doors, skylights,

exterior windows, storm shutters, and any other external component which help maintain

the integrity of the building envelope. For the purposes of the testing required in

TAS 202 Section 5.2, design pressures calculated in accordance with ASCE 7 are permitted

to be multiplied by 0.6.

3.2.3 *Maximum Deflection—*The maximum displacement measured to the nearest

1/8 inch attained from an original position while a maximum load is being applied.

3.2.6 *Test load—*One and one-half (1.5) times the design pressure (positive or negative) as determine by Section 1620 of the *Florida Building Code, building* for which the specimen is to be tested, expressed in psf.

**ASTME1300 – 16 Standard Practice for Determining Load Resistance of Glass in Buildings**

**1. Scope**

1.1 This practice describes procedures to determine the load resistance (LR) of specified glass types, including combinations of glass types used in a sealed insulating glass (IG) unit, exposed to a uniform lateral load of short or long duration, for a specified probability of breakage.

1.2 This practice applies to vertical and sloped glazing in buildings for which the specified design loads consist of wind load, snow load and self-weight with a total combined magnitude less than or equal to 15 kPa (315 psf). This practice shall not apply to other applications including, but not limited to, balustrades, glass floor panels, aquariums, structural glass members, and glass shelves.

1.3 This practice applies only to monolithic and laminated glass constructions of rectangular shape with continuous lateral support along one, two, three, or four edges. This practice assumes that (*1*) the supported glass edges for two, three, and four-sided support conditions are simply supported and free to slip in plane; (*2*) glass supported on two sides acts as a simply supported beam; and (*3*) glass supported on one side acts as a cantilever. For insulating glass units, this practice only applies to insulating glass units with four-sided edge support.

1.6 Charts in this practice provide a means to determine approximate maximum lateral glass deflection. Appendix X1 provides additional procedures to determine maximum lateral deflection for glass simply supported on four sides.

1.8 Appendix X2 lists the key variables used in calculating the mandatory type factors in Tables 1-3 and comments on their conservative values.

**6. Procedure**

6.1 Select the procedure to determine the load resistance.

6.2 *Basic Procedure:*

6.2.1 *For Monolithic Single Glazing Simply Supported Continuously*

*Along Four Sides: ----*

6.2.2 *For Monolithic Single Glazing Simply Supported Continuously*

*Along Three Sides: ----*

6.2.3 *For Monolithic Single Glazing Simply Supported Continuously*

*Along Two Opposite Sides: ---*

6.2.4 *For Monolithic Single Glazing Continuously Supported*

*Along One Edge (Cantilever): ---*

6.2.5 *For Single-Glazed Laminated Glass (LG) Constructed*

*With a PVB Interlayer Simply Supported Continuously Along Four Sides Where In-Service Laminated Glass (LG) Temperatures At The Design Load Do Not Exceed 50°C (122°F): ---*

6.2.6 *For Laminated Single Glazing Simply Supported Continuously Along Three Sides Where In-Service Laminated*

*Glass (LG) Temperatures At The Design Load Do Not Exceed 50°C (122°F): ---*

6.2.7 *For Laminated Single Glazing Simply Supported Continuously Along Two Opposite Sides Where In-Service Laminated Glass (LG) Temperatures At The Design Load Do Not Exceed 50°C (122°F): ---*

6.2.8 *For Laminated Single Glazing Continuously Supported Along One Edge (Cantilever) Where In-Service Laminated Glass (LG) Temperatures At The Design Load Do Not Exceed 50°C (122°F):*

6.2.9 *For Double Glazed Insulating Glass (IG) with Monolithic Glass Lites of Equal (Symmetric) or Different (Asymmetric) Glass Type and Thickness Simply Supported Continuously Along Four Sides: ---*

6.2.10 *For Double Glazed Insulating Glass (IG) with One Monolithic Lite and One Laminated Lite Under Short Duration Load Simply Supported Continuously Along Four Sides:*

6.2.11 *For Double Glazed Insulating Glass with Laminated Glass (LG) over Laminated Glass (LG) Under Short Duration Load Simply Supported Continuously Along Four Sides: ----*

6.2.12 *For Double Glazed Insulating Glass (IG) with One Monolithic Lite and One Laminated Lite, Under Long Duration Load Simply Supported Continuously Along Four Sides: ---*

6.2.13 *For Double Glazed Insulating Glass with Laminated Glass (LG) over Laminated Glass (LG) Under Long Duration Load: --*

6.2.14 *For Triple Glazed Insulating Glass (IG) with Three Lites of Monolithic Glass of Equal (Symmetric) or Different (Asymmetric) Thickness with Two Separately Sealed Air Spaces and Equal Glass Type, Simply Supported Continuously Along Four Sides:*

**APPENDIXES (Nonmandatory Information)**

**X1. ALTERNATE PROCEDURE FOR CALCULATING THE APPROXIMATE CENTER OF GLASS DEFLECTION**

**X2. COMMENTARY**

**X3. DETERMINATION OF INSULATING GLASS (IG) LOAD SHARE FACTORS (LSF)**

**X4. LOAD DURATION FACTORS**

**X5. COMBINING LOADS OF DIFFERENT DURATION**

**X6. APPROXIMATE MAXIMUM SURFACE STRESS TO BE USED WITH INDEPENDENT STRESS ANALYSES**

**X7. APPROXIMATE MAXIMUM EDGE STRESS FOR GLASS**

**X8. METHOD FOR ESTABLISHING EQUIVALENCY OF NON-POLYVINYL BUTYRAL (PVB) POLYMER INTERLAYERS**

**X9. METHOD FOR DETERMINING EFFECTIVE THICKNESS OF LAMINATED GLASS FOR ANALYSIS**

**OF STRESSES AND DEFLECTION**

 **Notes:**

* The glass configuration of the product in question falls outside the technical scope of ASTM E1300 -16. In fact, there is no minimum/required standard or procedure given or implied in ASTM E1300 for the product in question.
* The Code does not specify a specific glass load capacity limit for the product in question. Therefore, glass load capacity limit for the product in question would be as tested.