BUILDING DROPS
1900 NE MIAMI CT. SUITE 2-15, MIAMI, FL 33132

June 11, 2025

TO: **Whom It May Concern**

FROM: **Hermes Norero, P.E.**
Florida Registered Professional Engineer #73778

PURPOSE: **Sliding Glass Door FL15560 Alternate Size Qualification**

ON BEHALF OF: **Fleetwood Windows & Doors**
1 Fleetwood Way
Corona, CA 92879

Report: **PER 9894**

Scope:
The purpose of this report is to evaluate and qualify an Impact and Non-Impact configuration for the Fleetwood Windows & Doors Series 3070-HI Sliding Glass/Pocket Door, approved under Florida Product Approval FL15560.18 and FL15560.20. The evaluation complies with the 2023 Florida Building Code (FBC).

Impact Door:
Comparative Analysis:
The Fleetwood Series 3070-HI Sliding Glass/Pocket Door, approved under FL15560.18, was originally tested with a panel size of 62” x 142”. The tested configuration included two corner details (135° and 90°) and a pocket feature at one end, rated for a design pressure of +50/-55 PSF. This evaluation assesses a smaller panel size of 72” x 120”, maintaining the same details as the approved configuration. Since the span of the new panel is smaller than tested but has a width larger than tested, a comparative analysis per AAMA 2502-19 is appropriate to determine the allowable design pressure for the door in question. The analysis confirms that the alternate panel size can withstand the tested pressures of +50/-55 PSF. Detailed calculations are provided in the Appendix of this report.

Glass Breakage Analysis:
A glass breakage analysis, conducted per ASTM E1300, verifies that the 9/16-inch laminated heat-strengthened glass to be used in the impact rated alternate sized panel (72” x 120”) can support the applied design pressures of +50/ -55 PSF. Detailed calculations are included in the Appendix of this report.

Installation Requirements:
The door must be installed according to the details specified in drawing No. FL-15560.18 under Florida Product Approval FL15560.18. This evaluation does not cover the anchoring of the wall pocket track. Anchors not specifically reviewed in this report must be selected and installed following the door manufacturer’s recommended procedures and the referenced Florida Product Approval.

Non-Impact Door:

Comparative Analysis:

The Fleetwood Series 3070-HI Sliding Glass/Pocket Door, approved under FL15560.20, was originally tested with a panel size of 62" x 142". The tested configuration included two corner details (135° and 90°) and a pocket feature at one end, rated for a design pressure of +50/-55 PSF. This evaluation assesses a smaller panel size of 72" x 120", maintaining the same details as the approved configuration. Since the span of the new panel is smaller than tested but has a width larger than tested, a comparative analysis per AAMA 2502-19 is appropriate to determine the allowable design pressure for the door in question. The analysis for the Non-Impact configuration allows for the allowable design pressure to exceed the tested pressure and results in a design pressure of +56.9/-62.6 PSF. Detailed calculations are provided in the Appendix of this report.

Glass Breakage Analysis:

A glass breakage analysis, conducted per ASTM E1300, verifies that the 1-inch insulated tempered glass to be used in the non-impact rated alternate sized panel (72" x 120") can support the applied design pressures of +56.9/-62.6. Detailed calculations are included in the Appendix of this report.

Installation Requirements:

The door must be installed according to the details specified in drawing No. FL-15560.20 under Florida Product Approval FL15560.18. This evaluation does not cover the anchoring of the wall pocket track. Anchors not specifically reviewed in this report must be selected and installed following the door manufacturer's recommended procedures and the referenced Florida Product Approval.

Limits of Use:

1. These products have been evaluated and are in compliance with the 2023 Florida Building Code.
2. Product installation shall be as listed herein. Site conditions that deviate from those specified shall require further engineering analysis by a licensed engineer or registered architect.
3. Manufacturer is responsible for the fabrication and design of the products to be installed.
4. Existing substrate shall be adequate to withstand imposed loads from specified systems and anchorage as verified by the Engineer of Record.

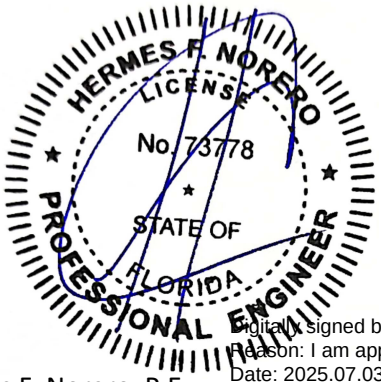
Referenced Data:

1. ASTM E1300
2. 8th Edition Florida Building Code (FBC) 2023
3. Drawing No. FL-15560.18, under Florida Product Approval FL15560.18
4. Drawing No. FL-15560.20, under Florida Product Approval FL15560.20

Conclusion:

In my professional opinion, the Impact DOOR in question is qualified for +50/-55 PSF and the Non-impact door is qualified for +56.9/-62.6 PSF at a O.A. panel size of 72" x 120" in the configurations outlined within this report, by methods of installation as evaluated in this report. I trust that this will satisfy your needs, however, feel free to call if you have any questions.

Respectfully,



Digitally signed by Hermes F. Norero, P.E.
Reason: I am approving this document
Date: 2025.07.03 15:10:50 -04'00'

Hermes F. Norero, P.E.
Florida Registered Professional Engineer #73778

Certification of Independence:

Please note that I do not have nor will I acquire a financial interest in any company manufacturing or distributing the product(s) for which this report is being issued. Also, I do not have nor will I acquire a financial interest in any other entity involved in the approval process of the listed product(s).

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APPENDIX

Comparative Analysis
ASTM E1300 WGD Analysis:
Non-Impact
Impact

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COMPARATIVE ANALYSIS (AAMA 2502-07): Sliding Glass Door

1) Check Deflection

The comparative anlaysis for deflection requires that the members do not deflect beyond the tested, relative deflection. Thus, the deflection of the tested unit, in relation to the test span, must be equal to or greater than the deflection of the compared unit, in relation to the compared span. The equation below describes this relationship:

$$\frac{\Delta_T}{L_T} = \frac{\Delta_x}{L_x} \qquad \text{(Eq. - 1)}$$

The simple beam formula for calculating deflection (triangular/trapezoidal load distribution),

$$\Delta = \frac{w*L^4}{EIK_d} \qquad \text{(Eq. - 2)}$$

Substituting Eq-2 into Eq-1, and solving for allowable design pressure of compared unit yields the following,

$$DP_x = \frac{A_T*DP_T*L_T^2K_{dx}}{A_X*L_x^2K_{dT}} \qquad \text{(Eq. - 3)}$$

2) Check Moment/Stresses

The comparative anlaysis for moment requires that the members do not experience stresses beyond those tested. Thus, the moments & stresses of the tested unit, must be equal to or greater than the stresses of the compared unit. The equation below describes this relationship:

$$M_T = M_x \qquad \text{(Eq. - 4)}$$

The simple beam formula for calculating moment (triangular/trapezoidal load distribution),

$$M = \frac{w*L^2}{K_f} \qquad \text{(Eq. - 5)}$$

Substituting Eq-5 into Eq-4, and solving for allowable design pressure of compared unit yields the following,

$$DP_x = \frac{A_T*DP_T*L_TK_{Fx}}{A_X*L_xK_{FT}} \qquad \text{(Eq. - 6)}$$

3) Check Concentrated Load (End Reactions)

The comparative anlaysis for concentrated load requires that the members do not experience end reactions beyond those tested. Thus, the concentrated load (end reactions) of the tested unit, must be equal to or greater than the concentrated load of the compared unit. The equation below describes this relationship:

$$R_T = R_X \qquad \text{(Eq. - 7)}$$

The simple beam formula for calculating end reactions (triangular/trapezoidal load distribution),

$$R = \frac{A*DP}{2} \qquad \text{(Eq. - 8)}$$

Substituting Eq-8 into Eq-7, and solving for allowable design pressure of compared unit yields the following,

$$DP_x = \frac{A_T*DP_T}{A_X} \qquad \text{(Eq. - 9)}$$

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4) Analysis and Summary of Results

Tested Tributary Width:	62	in.
Unsupported Span:	142	in.
Tested Tributary Area:	47.79	ft^2
Tested Positive Design Pressure:	50	PSF
Tested Negative Design Pressure:	55	PSF
Tested Positive Equivalent EI*Δ:	1E+08	lb/in.
Tested Negative Equivalent EI*Δ:	1E+08	lb/in.
Tested Positive Equivalent M:	50813	lb-in
Tested Negative Equivalent M:	55894	lb-in
K_d =	64.89	
K_F =	6.68	
Tested Positive Concentrated Load	1194.8	lb
Tested Negative Concentrated Load	1314.3	lb

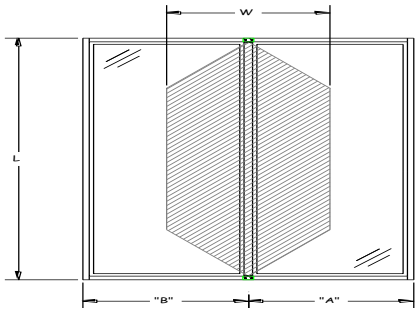

TABLE A.1: COMPARATIVE ANALYSIS PER AAMA 2502-07														
W	L	A	K	K_d	K_f	P1		P2		P3		P		Area Check
						POS	NEG	POS	NEG	POS	NEG	POS	NEG	
72	120	42.00	0.30	62.43	6.36	76.6	84.3	64.2	70.6	56.9	62.6	56.9	62.6	OK

Note: P1 represents allowable DP limited by deflection, P2 represents allowable DP limited by stress/moment, and P3 represents the allowable DP limited by concentrated load/end reactions. The final allowable design pressure is represented as P.

Customer Name: FLEETWOOD WINDOWS
Prepared By: BUILDING DROPS, INC.
Project Comments: NON-IMPACT DOOR
GLAZING DETAIL:
1/4" TEMPERED
1/2" ALUMINUM SPACER + AIR
1/4" TEMPERED

Disclaimer

These calculations are based on the ASTM E1300-09, ASTM E1300-12 and ASTM E1300-16 Standard Practices for determining the load resistance of glass in buildings and provided to the customer as a guide only. WGD does NOT take responsibility for providing structural load calculations and providing load resistances for the customer's application.

The software used to generate this report has been developed by Standards Design Group (SDG), and can be used to determine the load resistance of specified glass types exposed to uniform lateral loads of short or long duration subject to the following condition(s):

- The glass is free of edge and surface damage and has been properly glazed in the opening in conformance with the manufacturer's recommendations.

The user has the responsibility for selecting the correct procedures for the required application from the software. The stiffness of members supporting any glass edge shall be sufficient that under design load, edge deflections shall not exceed L/175, where L denotes the length of the supported edge. The non-factored load values for laminated glass are representative of test data and calculations performed for an interlayer at a temperature of 50° C (122° F). For other limiting conditions that may apply, refer to Section 5 of ASTM E1300 and local building codes.

SDG disclaims any responsibility for any particular results relating to the use of the WGD Program. SDG disclaims any liability for any personal injury or any loss or damage of any kind, including all indirect, special, or consequential damages and lost profits, arising out of or relating to the use of the WGD Program.

Glazing Information

Supported Edges:	Four sides simply supported
Shape:	Rectangular
Lite Width:	72.0 in.
Lite Height:	144 in.
Glazing Angle:	90.0 °

Glazing Construction (Double Glazed Insulating Unit)

Exterior Lite Properties (1/4 in. Monolithic)

Construction: 1/4 in. (FT)

Airspace Properties

Thickness: 0.500 in.

Interior Lite Properties (1/4 in. Monolithic)

Construction: 1/4 in. (FT)

Applied Loads

Description	Load	Duration
Short Duration	62.6 psf	3.00 sec

Glazing Construction (Double Glazed Insulating Unit)

Exterior Lite Properties (1/4 in. Monolithic)

Construction: 1/4 in. (FT)

Airspace Properties

Thickness: 0.500 in.

Interior Lite Properties (1/4 in. Monolithic)

Construction: 1/4 in. (FT)

Load Resistance

Short Duration (3 Sec)

Description	NFL	GTF	LSF	LR
Exterior Lite	17.5 psf	3.60	1/0.500	126 psf
Interior Lite	17.5 psf	3.60	1/0.500	126 psf

Long Duration (30 Days)

Description	NFL	GTF	LSF	LR
Exterior Lite	17.5 psf	2.85	1/0.500	99.5 psf
Interior Lite	17.5 psf	2.85	1/0.500	99.5 psf

Comparisons

Short Duration

62.6 psf 3.00 sec <= 126 psf	OK
Approximate center of glass deflection	
Exterior Lite	1.76 in. *
Interior Lite	1.76 in. *

Notes

Load resistance values are computed in accordance with ASTM E1300-16 Section 6.2 and are based on non-factored load values calculated in a manner consistent with those presented in ASTM E1300-16.

* Deflection value extends beyond deflection chart

Customer Name: FLEETWOOD WINDOWS
Prepared By: BUILDING DROPS, INC.
Project Comments: IMPACT DOOR
GLAZING DETAIL:
1/4" HEAT STRENGTHENED
0.090" SENTRYGLAS
1/4" HEAT STRENGTHENED

Disclaimer

These calculations are based on the ASTM E1300-09, ASTM E1300-12 and ASTM E1300-16 Standard Practices for determining the load resistance of glass in buildings and provided to the customer as a guide only. WGD does NOT take responsibility for providing structural load calculations and providing load resistances for the customer's application.

The software used to generate this report has been developed by Standards Design Group (SDG), and can be used to determine the load resistance of specified glass types exposed to uniform lateral loads of short or long duration subject to the following condition(s):

- The glass is free of edge and surface damage and has been properly glazed in the opening in conformance with the manufacturer's recommendations.

The user has the responsibility for selecting the correct procedures for the required application from the software. The stiffness of members supporting any glass edge shall be sufficient that under design load, edge deflections shall not exceed L/175, where L denotes the length of the supported edge. The non-factored load values for laminated glass are representative of test data and calculations performed for an interlayer at a temperature of 50° C (122° F). For other limiting conditions that may apply, refer to Section 5 of ASTM E1300 and local building codes.

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Glazing Information

Supported Edges:	Four sides simply supported
Shape:	Rectangular
Lite Width:	72.0 in.
Lite Height:	144 in.
Glazing Angle:	90.0 °

Glazing Construction (Single Glazed Lite)

Single Lite Properties (1/2 in. Laminated)

Construction: 1/2 in. (HS) | 0.090 in. (Ionomer)

Applied Loads

Description	Load	Duration
Short Duration	55.0 psf	3.00 sec

Glazing Construction (Single Glazed Lite)

Single Lite Properties (1/2 in. Laminated)

Construction: 1/2 in. (HS) | 0.090 in. (Ionomer)

Load Resistance

Short Duration (3 Sec)

Description	NFL	GTF	LR
Single Lite	38.0 psf	2.00	76.1 psf

Long Duration (30 Days)

Description	NFL	GTF	LR
Single Lite	38.0 psf	1.30	49.4 psf

Comparisons

Short Duration
55.0 psf 3.00 sec <= 76.1 psf OK
Approximate center of glass deflection
Single Lite 0.93 in.

Notes

Load resistance values are computed in accordance with ASTM E1300-16 Section 6.2 and are based on non-factored load values calculated in a manner consistent with those presented in ASTM E1300-16.