

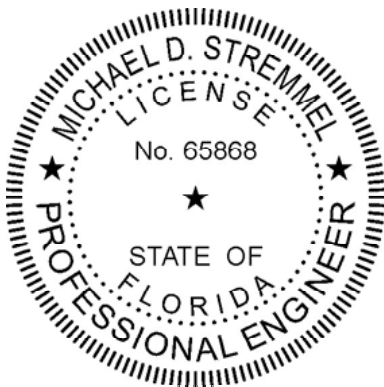
PRODUCT APPROVAL SUPPORTING CALCULATIONS

120MD/130MD/140MD Sliding Glass Doors

REPORT TO:

**MI WINDOWS AND DOORS, LLC
702 WEST MARKET ST
GRATZ, PENNSYLVANIA 17030**

REPORT NUMBER: 27488.03-107-16
REPORT DATE: 12/11/23



2023.12.11 10:18:06 -05'00'

A handwritten signature in black ink, appearing to read "Michael D. Stremmel".

Michael D. Stremmel, PE
FL PE 65868
FL REG 37122

This item has been digitally signed and sealed by Michael D. Stremmel, PE on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on electronic copies.

Scope

Molimo, LLC was contracted by MI Windows and Doors, LLC to evaluate glazing, installation methods and alternate installation methods for their Series 120MD/130MD/140MD Sliding Glass Doors. The evaluation is based on physical testing and product certifications.

The products considered in this report satisfy the requirements of the *Florida Building Code, Building 8th Edition (2023)* and *Florida Building Code, Building 8th Edition (2023)* for the overall sizes and design pressures of the following product certifications and the installation methods presented in this report.

Table 1 Summary of Product Certifications and Limitations of Use

Series/Model	Product Certification	Size (W x H)	Limitations of Use
120MD/130MD/140MD SGD (XXXO)	CPD 19130	187" x 120"	+/-55 psf High Velocity Hurricane Zone
120MD/130MD/140MD SGD (XXXO) (Impact)	CPD 19170	187" x 120"	+/-55 psf Large Missile High Velocity Hurricane Zone

Reference standards utilized in this project include:

Florida Building Code, Building, 8th Edition (2023). International Code Council, 2023.

ANSI/AWC NDS-2018 National Design Specification (NDS) for Wood Construction. American Wood Council, 2018.

ADM1-2020 2020 Aluminum Design Manual. The Aluminum Association, Inc., 2020.

AISI S100-16 North American Specification for the Design of Cold-Formed Steel Structural Members, 2016. American Iron and Steel Institute, 2012.

ICC-ES Report ESR-1976 *ITW Buildex TEKS Self-Drilling Fasteners*. ICC Evaluation Service. 07/2016.

NOA 19-0619.01 *1/4" Crete-Flex, 1/4" Ultracon SS4 and 1/4" Aggre-Gator 300 Concrete and Masonry Screw Anchor*. Miami-Dade County Product Control Section. 07/17/2019.

NOA 16-1222.06 *Tapcon Concrete and Masonry Anchors with Advanced Threadform Technology*. Miami-Dade County Product Control Section. 12/22/16.

AAMA TIR A9-14 *Design Guide for Metal Cladding Fasteners*. American Architectural Manufacturers Association, 2014.

ASTM E1300-12ae1 *Standard Practice for Determining Load Resistance of Glass in Buildings*. ASTM International, 2012.

The anchorage analyses presented herein do not address the water resistance, water penetration or air infiltration performance of the installation method or the installed product. In addition, the analyses rely on the assumption that the building substrate is capable of withstanding incurred loads.

Certification of Independence

In accordance with Rule 61G20-3 Florida Administrative Code, Molimo, LLC hereby certifies the following:

- Molimo, LLC does not have, nor does it intend to acquire or will it acquire, a financial interest in any company manufacturing or distributing products tested or labeled by the agency.
- Molimo, LLC is not owned, operated or controlled by any company manufacturing or distributing products it tests or labels.
- Michael D. Stremmel, P.E. does not have, nor will acquire, a financial interest in any company manufacturing or distributing products for which the reports are being issued.
- Michael D. Stremmel, P.E. does not have, nor will acquire, a financial interest in any other entity involved in the approval process of the product.

Analyses

Summary of Test Results

The following table summarizes the various 120MD/130MD/140MD Sliding Glass Door products and their corresponding performance levels which have been established by testing or product certification.

Table 2 Summary of Test Results

Series/Model	Test Report Number	Product Certification	Size (W x H)	Performance
120MD/130MD/140MD SGD (XXXO)	2261.01-106-11 (Rev 1, 07/31/20)	CPD 19130	187" x 120"	+/-55 psf
120MD/130MD/140MD SGD (XXXO) (Impact)	2261.02-106-11 (Rev 2, 08/25/20)	CPD 19170	187" x 120"	+/-55 psf Large Missile
120MD/130MD/140MD SGD (O) (Impact)	2622.01-106-11 (Rev -, 10/29/20)	-	50-1/2" x 120"	+/-55 psf Large Missile

Testing documented in Table 1 was conducted by Molimo, LLC. in York, Pennsylvania. (Florida Department of Business & Professional Regulation Test Lab No. TST11282, IAS Laboratory Certification TL-678).

Glazing Evaluation

The glazing is evaluated with ASTM E1300-12ae1 *Standard Practice for Determining Load Resistance of Glass in Buildings* assuming four-sided support. Glazing constructions are listed in Table 3. Glazing analyses are presented on page 9 to page 10 and summarized in Table 4.

Table 3 Glazing Constructions

Glass Type	Glazing Construction
1-1/16" IG	3/16" Tempered Glass (Exterior) 11/16" Stainless Steel Box Spacer 3/16" Tempered Glass (Interior)
1-1/16" IG (Impact)	3/16" Tempered Glass (Exterior) 7/16" Stainless Steel Box Spacer (2) 3/16" Annealed Glass + 0.100" Saflex PVB (Interior)
1-1/16" IG (Impact) (Heavy Glass Option)	1/4" Tempered Glass (Exterior) 7/32" Stainless Steel Box Spacer (2) 1/4" Annealed Glass + 0.100" Saflex PVB (Interior)

Table 4 Glazing Analyses

Product	Glass Type	Glass Size	Load Resistance
120MD/130MD/140MD SGD (XXXO)	1-1/16" IG	40-5/8" x 109-1/2"	147 psf
120MD/130MD/140MD SGD (XXXO) (Impact)	1-1/16" IG (Impact)	40-5/8" x 109-1/2"	65.0 psf

Notes: 1. The analysis of the 1-1/16" IG glass qualifies the IG Heavy Glass Option

Calculated load resistances exceed the claimed design pressures thereby validating the glazing.

Interlayer for impact glazing is Eastman Chemical Saflex PVB as documented in Miami-Dade NOA 17-0712.05.

As-Tested Installation Analysis

For air/water/structural and impact/cycle testing, the test specimens were secured to a Southern Yellow Pine buck as summarized in Table 5. The as-tested installation methods are evaluated on page 11 to page 13 and the established design capacities are presented in Table 5.

Table 5 As-tested Anchorage Design Capacities

Test	Connection	Capacity
120MD/130MD/140MD SGD (XXXO) Air/Water/Structural Tests	<u>Flange Installation</u> Head, Sill and Jambs: Pairs of #14 x 2" flat head screws located 6" from each corner and 16" on center. One screw in innermost track and one screw in outermost track.	438 lb
	<u>Finless Installation</u> Head, Sill and Jambs: Pairs of #14 x 2" flat head screws located 6" from each corner and 16" on center. One screw in innermost track and one screw in outermost track.	438 lb
120MD/130MD/140MD SGD (XXXO) Impact/Cycle Tests	<u>Flange Installation</u> Head, Sill and Jambs: Pairs of #14 x 2" flat head screws located 6" from each corner and 16" on center. One screw in innermost track and one screw in outermost track.	438 lb
	<u>Finless Installation</u> Head, Sill and Jambs: Pairs of #14 x 2" flat head screws located 6" from each corner and 16" on center. One screw in innermost track and one screw in outermost track.	438 lb
120MD/130MD/140MD SGD (O) Impact/Cycle Tests	<u>Flange Installation</u> Head, Sill and Jambs: Pairs of #14 x 2" flat head screws located 6" from each corner and 16" on center. One screw in innermost track and one screw in outermost track.	438 lb

The capacities presented in Table 5 will be used to prove acceptable alternate anchors and substrates for the doors.

Calculations presented on page 14 show the as-tested anchors have sufficient design capacity for the as-tested anchor spacing and the established design pressure.

Alternate Anchorages

Calculations on page 15 through page 18 determine the design capacity of alternate through-frame installation anchorages for the door. The alternate anchorage capacities are summarized in Table 6.

Table 6 Alternate Anchorage Capacities for Through-Frame Installation

Substrate	Anchor	Capacity	Comments
18 Gauge Steel Stud	1/4-14 TEKS Screw	558 lb	1. 33 KSI yield strength stud. 2. Full penetration +3 threads. 3. Limited by tilting capacity. 4. 1/4" maximum shim.
Aluminum Framing	1/4-14 TEKS Screw	376 lb	1. Minimum 0.053" thick 6063-T5 aluminum framing. 2. Full penetration +3 threads. 3. Limited by tilting capacity. 4. 1/4" maximum shim.
Concrete	1/4" Ultracon SS4	576 lb	1. Minimum $f'_c = 2,500$ psi. 2. 1-1/4" Minimum Embedment. 3. 2-1/2" Min. Edge Distance. 4. 2-1/4" minimum anchor spacing. 5. Limited by bearing capacity. 6. Maximum 1x buck strip. 7. 1/4" maximum shim
CMU	1/4" Ultracon SS4	482 lb	1. Minimum ASTM C90 grout-filled CMU. 2. 1-3/4" Minimum Embedment. 3. 2-1/2" Min. Edge Distance. 4. 2-1/4" minimum anchor spacing. 5. Limited by shear capacity. 6. Maximum 1x buck strip. 7. 1/4" maximum shim.

- Notes:**
1. Capacity values reported are per anchor pair.
 2. For concrete and CMU, 2-1/4" anchor spacing is for preferred anchor placement in two-track door.
 3. 1/4" Tapcon anchors may be substituted for 1/4" Ultracon SS4 provided 4" anchor-anchor spacing is provided. This may require staggering anchor pairs in two-track frames.
 4. 1/4" Crete-Flex SS4 anchors may be substituted for 1/4" Ultracon SS4 provided 3" anchor-anchor spacing is provided. This may require staggering anchor pairs in two-track frames.

Calculations on page 19 through page 26 determine the design capacity of the tested and alternate hook strip anchor installation anchorages for the door. The alternate anchorage capacities are summarized in Table 7.

Table 7 Anchorage Capacities for Hook Strip Anchor Installation

Substrate	Anchor	Capacity	Comments
Wood (Tested)	#8 x 1-1/2" Screw	191 lb	1. 1-1/4" minimum penetration to wood.
18 Gauge Steel Stud	1/4-14 TEKS Screw	220 lb	1. 33 KSI yield strength stud. 2. Full penetration +3 threads. 3. Limited by bearing capacity.
Aluminum Framing	1/4-14 TEKS Screw	155 lb	1. Minimum 0.053" thick 6063-T5 aluminum framing. 2. Full penetration +3 threads. 3. Limited by bearing capacity.
Concrete	1/4" Ultracon SS4	186 lb	1. Minimum $f'_c = 2,500$ psi. 2. 1-3/4" Minimum Embedment. 3. 1-1/2" Min. Edge Distance. 4. Limited by bearing capacity. 5. Maximum 1x buck strip.
CMU	1/4" Ultracon SS4	161 lb	1. Minimum ASTM C90 grout-filled CMU. 2. 1-3/4" Minimum Embedment. 3. 1-1/2" Min. Edge Distance. 4. Limited by shear capacity. 5. Maximum 1x buck strip.

Notes: 1. 1/4" Tapcon anchors may be substituted for 1/4" Ultracon SS4.
 2. 1/4" Crete-Flex SS4 anchors may be substituted for 1/4" Ultracon SS4.

Comparative Analysis

The compared products are an alternate-size version of the tested products. Calculations are performed to establish design pressures for the compared products that would cause the same proportional deflection of spanning members (stiles), concentrated loads and member stresses as proven by the tested products as required by Florida Building Code §2411.3.2.4. Several potential design pressures are calculated and the proposed design pressure of the compared product shall be the least of the calculated design pressures. Compared panel areas may not exceed the panel area of the tested product. Calculations are presented on page 27 to page 28 and summarized in the following table.

Table 8 Results of Comparative Analysis

Panel Height (in)	Structural Design Pressure (psf) for Panel Width (inch)					
	24	30	36	42	48	54
80	82.5	82.5	82.5	82.5	82.5	82.5
84	82.5	82.5	82.5	82.5	82.5	81.9
90	82.5	82.5	82.5	82.5	79.5	74.1
96	82.5	82.5	82.5	80.0	72.9	67.6
102	82.5	82.5	83.3	74.1	67.3	62.2
108	82.5	82.5	77.8	69.0	62.5	-
114	82.5	84.8	72.9	64.5	58.3	-
118	82.5	81.5	70.0	61.9	55.8	-
120	82.5	80.0	68.6	58.8	53.1	-
126	82.5	70.5	59.3	51.4	-	-
132	75.9	61.2	51.5	44.6	-	-
138	66.4	53.5	44.9	-	-	-
144	58.3	47.0	39.4	-	-	-

Notes: 1. Positive design pressure is limited by water test to 60 psf with 3-1/2" sill extender.
 2. Positive design pressure is limited by water test to 45 psf with 2-5/8" sill extender.
 3. Door installed where the overhang ratio ≥ 1 are not limited by water test pressure in accordance with FBC §2411.3.2.1.
 4. Impact resistant products are limited to maximum +55/-55 psf.
 5. Structural design pressures are not limited by glass strength (see page 29).

Attachments

Appendix A – Revision Log (1 page)



Glass Load Resistance Report -- MI 120MD/130MD/140MD

Glazing Information

Edge Supports: 4 Sides
Glazing Angle: 90°
Lite Dimensions:
Width: 40.6 in.
Height: 110 in.

Project Details

Project Name: MI 120MD/130MD/140MD
Location:
Comments: 48x117 Panel
non-Impact Glass

Glass Construction (Rectangular)

Double Glazed Insulating Unit

Air Space: 0.69 in.

	Outboard Lite	Inboard Lite
Glass Type:	Fully Tempered	Fully Tempered
Nominal Thickness:	3/16 in.	3/16 in.

Short Load Duration, Resistance, and Deflection Data

Load (~ 3 sec.): 55.0 psf
Load Resistance: 147 psf
Approximate center of glass deflection: 0.77 in.

Conclusion

Based on your design information, the load resistance is greater than or equal to the specified loading.

Statement of Compliance

Procedures followed in determining the resistance of this window glass are in accordance with ASTM E1300-09/12.

Disclaimer:

This software 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 conditions:

- The glass is free of edge and surface damage and has been properly glazed in the opening in conformance with the manufacturer's recommendations.
- Procedures exist to determine load resistance for rectangular glass assemblies that are:
 - a. Continuously supported along all four edges,
 - b. Continuously supported along three edges,
 - c. Continuously supported along two parallel edges, and
 - d. Continuously supported along one edge.
- The software user has the responsibility of 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 that length of the supported edge.
- The manufacturer states that the Safety Plus II 0.090 Polyurethane Large Missile Resistant Interlayer is comparable to the PVB Interlayer.

For other limiting conditions that may apply, refer to Section 5 of ASTM E1300 and local building codes.

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Prepared by: _____ on 7/21/2020



Glass Load Resistance Report -- MI 120MD/130MD/140MD

Glazing Information

Edge Supports: 4 Sides
Glazing Angle: 90°
Lite Dimensions:
Width: 40.6 in.
Height: 110 in.

Project Details

Project Name: MI 120MD/130MD/140MD
Location:
Comments: 48x117 Panel
Impact Glass

Glass Construction (Rectangular)

Double Glazed Insulating Unit

	Air Space: 0.44 in.	
	Outboard Lite	Inboard Lite
Glass Type:	Fully Tempered	Annealed
Nominal Thickness:	3/16 in.	3/8 in.
Interlayer Type:		PVB

Short Load Duration, Resistance, and Deflection Data

Load (~ 3 sec.): 55.0 psf
Load Resistance: 65.0 psf
Approximate center of glass deflection: 0.38 in.

Conclusion

Based on your design information, the load resistance is greater than or equal to the specified loading.

Statement of Compliance

Procedures followed in determining the resistance of this window glass are in accordance with ASTM E1300-09/12.

Disclaimer:

This software 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 conditions:

- The glass is free of edge and surface damage and has been properly glazed in the opening in conformance with the manufacturer's recommendations.
- Procedures exist to determine load resistance for rectangular glass assemblies that are:
 - a. Continuously supported along all four edges,
 - b. Continuously supported along three edges,
 - c. Continuously supported along two parallel edges, and
 - d. Continuously supported along one edge.
- The software user has the responsibility of 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 that length of the supported edge.
- The manufacturer states that the Safety Plus II 0.090 Polyurethane Large Missile Resistant Interlayer is comparable to the PVB Interlayer.
- 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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Prepared by: _____ on 7/21/2020

This calculation qualifies insulating glass option with 1/4" thick tempered to exterior and laminated glass comprised of two sheets of 1/4" thick annealed glass and 0.100" thick PVB to the interior.

As-Tested – Through-Frame to Wood

#14 x 2" Wood Screw through-frame to wood; 2 screws per location

0.080" thick Aluminum Frame (6005-T5, $F_y = 35,000$ psi, $F_u = 38,000$ psi)

1/4" Maximum Shim Space

Assume Spruce-Pine-Fir Wood Substrate Minimum ($G=0.42$) to be conservative

Allowable Shear of #14 x 2" Wood Screw

$Z' = 219$ lb (See page following two pages)

Bending of #14 x 2" Wood Screw

$L = 1/4"$ (maximum shim space)

$S = \pi d^3/32 = \pi(0.196)^3/32 = 0.000739$ in³

$F_b = (1.3)(0.6F_y) = (1.3)(0.6)(70,000 \text{ psi}) = 54,600$ psi (1.3 for weak axis bending)

$F_b = M/S = (VL/2)/S$ ($L/2$ for guided bending)

$V = 2SF_b/L = (2)(0.000739 \text{ in}^3)(54,600 \text{ psi})/0.25" = 323$ lb

Capacity of One Screw is 219 lb

Capacity of Two Screws per Anchor Location is 438 lb

As-Tested – Through-Frame to Wood (Continued)

Lateral Design Strength of Wood Connections

Data

Fastener		
Fastener	=	#14 Wood Screw
Shank Dia	=	0.242 in.
Root Dia.	=	0.196 in.
F_{yb}	=	70,000 psi
Fastener length	=	2.000 in.
Main Member		
Material	=	SPF
G	=	0.42
θ	=	90 $\leq$ (Angle of load to grain $0^\circ \leq \theta \leq 90^\circ$)
F_e	=	3,350 psi
Thickness	=	1.500 in.
Side Member		
Material	=	6005-T5 Aluminum
G	=	N/A
θ	=	90 $\leq$ (Angle of load to grain $0^\circ \leq \theta \leq 90^\circ$)
F_{es}	=	47,500 psi
Thickness	=	0.080 in.

Calculations

Lateral Bearing Factors

D	=	0.196 in.
ℓ_m	=	1.436 in.
K_θ	=	1.25
K_D	=	2.46
R_e	=	0.071
R_t	=	17.95
k_1	=	0.5183
k_2	=	0.5611
k_3	=	13.26

Yield Mode	R_d
I_m, I_s	2.46
II	2.46
III_m, III_s, IV	2.46

As-Tested – Through-Frame to Wood (Continued)

Lateral Design Values, Z

Mode I _m	=	383	lbf
Mode I _s	=	303	lbf
Mode II	=	157	lbf
Mode III _m	=	188	lbf
Mode III _s	=	137	lbf
Mode IV	=	189	lbf
C _D	=	1.6	

<===== Minimum Value

Wet Service Factor

 Fabrication/In-Service **Dry/Dry**

 C_M = 1.0

 In service temperature **T ≤ 100°F**

 C_t = 1.0

 C_g = 1.0

 C_Δ = 1.0

 Is fastener installed in end grain? **No**

 C_{eg} = 1.00

 Is fastener part of a diaphragm? **No**

 C_{di} = 1.0

 Is fastener toe-nailed? **No**

 C_{tn} = 1.00

Z' = 219 lbf

Validation of As-Tested Anchorage

Design Pressure +/- 55 psf

As-Tested Anchor Spacing: 16"

Door Height: 120"

Panel Width: 48"

Load to Head/Sill: $(55 \text{ psf}/144)(120"/2) = 22.9 \text{ lb/inch}$ **Governs**

Load to Jamb: $(55 \text{ psf}/144)(48"/2) = 9.2 \text{ lb/inch}$

As-tested anchor capacity: 438 lb

Maximum Spacing: $s = (438 \text{ lb})/(22.9 \text{ lb/inch}) = 19.1" > 16"$ **OK**

Minimum required anchor capacity is $(16"/19.1)(438 \text{ lb}) = 367 \text{ lb/pair}$ or 184 lb/anchor

Alternate Installation – Trough-Frame to Steel Stud

1/4-14 TEKS Screw

0.080" thick Aluminum Frame (6005-T5, $F_y = 35,000$ psi, $F_u = 38,000$ psi)

1/4" Maximum Shim Space

Minimum 18 gauge 33 KSI Steel Stud

Allowable Shear of 1/4-14 TEKS Screw

$$P_{ss}/\Omega = 990 \text{ lb (ESR-1976)}$$

Bearing of 1/4-14 TEKS Screw on Frame

$$\begin{aligned} V_a &= 2.0DtF_u/\Omega \\ V_a &= 2.0(0.250")(0.080")(38,000 \text{ psi})/3.0 \\ V_a &= 507 \text{ lb} \end{aligned}$$

Bearing of 1/4-14 TEKS Screw on Steel Stud

$$\begin{aligned} V_a &= 2.7DtF_{tu}/\Omega \\ V_a &= 2.7(0.250")(0.0428")(45,000 \text{ psi})/3.0 \\ V_a &= 433 \text{ lb.} \end{aligned}$$

Tilting of 1/4-14 TEKS Screw in Steel Stud

$$\begin{aligned} V_a &= 4.2(t_2^3D)^{1/2}F_{tu2}/n_s \\ V_a &= 4.2(0.0428''^3 \times 0.250'')^{1/2}(45,000 \text{ psi})/3.0 \\ V_a &= 279 \text{ lb.} \end{aligned}$$

Bending of 1/4-14 TEKS Screw

$$\begin{aligned} L &= 1/4" \text{ (Maximum Shim Space)} \\ S &= \pi d^3/32 = \pi(0.1882)^3/32 = 0.000654 \text{ in}^3 \\ F_b &= (1.3)(0.6F_y) = (1.3)(0.6)(92,000 \text{ psi}) = 71,760 \text{ psi (1.3 for weak axis bending)} \\ F_b &= M/S = (VL/2)/S \text{ (L/2 for guided bending)} \\ V &= 2SF_b/L = (2)(0.000654 \text{ in}^3)(71,760 \text{ psi})/0.25" = 374 \text{ lb.} \end{aligned}$$

Capacity of Connection is 279 lb.

Capacity of Two Screws per Anchor Location is 558 lb > 367 lb OK

Alternate Installation – Trough-Frame to Aluminum Framing

1/4-14 TEKS Screw

0.080" thick Aluminum Frame (6005-T5, $F_y = 35,000$ psi, $F_u = 38,000$ psi)

1/4" Maximum Shim Space

0.053" thick Aluminum Frame (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

Allowable Shear of 1/4-14 TEKS Screw

$$P_{ss}/\Omega = 990 \text{ lb (ESR-1976)}$$

Bearing of 1/4-14 TEKS Screw on Frame

$$\begin{aligned} V_a &= 2.0DtF_u/\Omega \\ V_a &= 2.0(0.250")(0.080")(38,000 \text{ psi})/3.0 \\ V_a &= 507 \text{ lb} \end{aligned}$$

Bearing of 1/4-14 TEKS Screw on Aluminum Frame

$$\begin{aligned} V_a &= 2.0DtF_{tu}/\Omega \\ V_a &= 2.0(0.250")(0.053")(22,000 \text{ psi})/3.0 \\ V_a &= 194 \text{ lb.} \end{aligned}$$

Tilting of 1/4-14 TEKS Screw in Aluminum Frame

$$\begin{aligned} V_a &= 4.2(t_2^3 D)^{1/2} F_{tu2}/n_s \\ V_a &= 4.2(0.053''^3 \times 0.250'')^{1/2} (22,000 \text{ psi})/3.0 \\ V_a &= 188 \text{ lb.} \end{aligned}$$

Bending of 1/4-14 TEKS Screw

$$\begin{aligned} L &= 1/4" \text{ (Maximum Shim Space)} \\ S &= \pi d^3/32 = \pi(0.1882)^3/32 = 0.000654 \text{ in}^3 \\ F_b &= (1.3)(0.6F_y) = (1.3)(0.6)(92,000 \text{ psi}) = 71,760 \text{ psi (1.3 for weak axis bending)} \\ F_b &= M/S = (VL/2)/S \text{ (L/2 for guided bending)} \\ V &= 2SF_b/L = (2)(0.000654 \text{ in}^3)(71,760 \text{ psi})/0.25" = 374 \text{ lb.} \end{aligned}$$

Capacity of Connection is 188 lb.

Capacity of Two Screws per Anchor Location is 376 lb > 367 lb OK

Alternate Installation – Through-Frame to Concrete

1/4" DeWalt/Elco Ultracon SS4

1-1/4" Minimum Embedment; 2-1/2" Minimum Edge Distance; 2-1/4" Anchor Spacing

1/4" Maximum Shim Space

0.080" thick Aluminum Frame (6005-T5, $F_y = 35,000$ psi, $F_u = 38,000$ psi)

Minimum $f'_c = 2,500$ psi Concrete

Allowable Shear of 1/4" Ultracon SS4

$$V_a = 288 \text{ lb} \quad (\text{NOA 19-0619.01}) \quad (\text{interpolate embed and spacing and scale to } f'_c = 2,500 \text{ psi})$$

Bearing of 1/4" Ultracon SS4 on Frame

$$\begin{aligned} V_a &= 2.0DtFu/\Omega \\ V_a &= 2.0(0.193")(0.080")(38,000 \text{ psi})/3.0 \\ V_a &= 391 \text{ lb} \end{aligned}$$

Bending of 1/4" Ultracon SS4

$$\begin{aligned} L &= 1/4" \text{ (Maximum Shim Space)} \\ S &= \pi d^3/32 = \pi(0.193")^3/32 = 0.000706 \text{ in}^3 \\ F_b &= (1.3)(0.6F_y) = (1.3)(0.6)(164,000 \text{ psi}) = 127,920 \text{ psi} \text{ (1.3 for weak axis bending)} \\ F_b &= M/S = (VL/2)/S \text{ (L/2 for guided bending)} \\ V &= 2SF_b/L = (2)(0.000706 \text{ in}^3)(127,920 \text{ psi})/0.25" = 722 \text{ lb.} \end{aligned}$$

Capacity of Connection is 288 lb

Capacity of Two Screws per Anchor Location is 576 lb > 367 lb OK

Shear Capacity of 1/4" Tapcon is 295 lb with 4" spacing

Shear Capacity of 1/4" DeWalt/Elco Crete-Flex SS4 is 348 lb with 3" spacing

Alternate Installation – Through-Frame to CMU

1/4" DeWalt/Elco Ultracon SS4

1-3/4" Minimum Embedment; 2-1/2" Minimum Edge Distance; 2-1/4" Anchor Spacing

1/4" Maximum Shim Space

0.080" thick Aluminum Frame (6005-T5, $F_y = 35,000$ psi, $F_u = 38,000$ psi)

Minimum ASTM C90 Grout-Filled Concrete Masonry Unit

Allowable Shear of 1/4" Ultracon SS4

$V_a = 241$ lb (NOA 19-0619.01) (Limited by 2-1/4" spacing available in 2-track door. In 3-track and 4-track doors with 4-1/2" anchor spacing capacity is 302 lb.)

Bearing of 1/4" Ultracon SS4 on Frame

$$V_a = 2.0DtFu/\Omega$$
$$V_a = 2.0(0.193")(0.080")(38,000 \text{ psi})/3.0$$
$$V_a = 391 \text{ lb}$$

Bending of 1/4" Ultracon SS4

$$L = 1/4" \text{ (Maximum Shim Space)}$$
$$S = \pi d^3/32 = \pi(0.193")^3/32 = 0.000706 \text{ in}^3$$
$$F_b = (1.3)(0.6F_y) = (1.3)(0.6)(164,000 \text{ psi}) = 127,920 \text{ psi (1.3 for weak axis bending)}$$
$$F_b = M/S = (VL/2)/S \text{ (L/2 for guided bending)}$$
$$V = 2SF_b/L = (2)(0.000706 \text{ in}^3)(127,920 \text{ psi})/0.25" = 722 \text{ lb.}$$

Capacity of Connection is 241 lb

Capacity of Two Screws per Anchor Location is 482 lb > 367 lb OK

Capacity of Connection is 302 lb for 3-track and 4-track doors

Capacity of Two Screws per Anchor Location is 604 lb for 3-track and 4-track doors > 367 lb OK

As-Tested – Hook Strip to Wood

#8 Wood Screw through hook strip to wood

0.062" thick Aluminum Hook Strip (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

Assume Spruce-Pine-Fir Wood Substrate Minimum ($G=0.42$) to be conservative

Allowable Shear of #8 Wood Screw

$Z' = 119$ lb (See page following two pages)

Allowable Tension of #8 Wood Screw

$W = 82$ lb/inch

$W' = (1.6)(82 \text{ lb/inch})(1" \text{ min embed}) = 131$ lb.

Pull-Over of #8 Wood Screw

$P_{nov} = C_{pov} t_1 F_{tu1} (D_{ws} - D_h) / \Omega$

$P_{nov} = 1.0(0.062")(22,000 \text{ psi})(0.322" - 0.164") / 3.0$

$P_{nov} = 72$ lb (Governs Tension)

Capacity of Screw Pair (one shear, one tension) = 191 lb

As-Tested – Hook Strip to Wood (Continued)

Lateral Design Strength of Wood Connections

Data

Fastener			
Fastener	=	#8 Wood Screw	
Shank Dia	=	0.164	in.
Root Dia.	=	0.131	in.
F_{yb}	=	90,000	psi
Fastener length	=	1.500	in.
Main Member			
Material	=	SPF	
G	=	0.42	
θ	=	90	$\leq$ (Angle of load to grain $0^\circ \leq \theta \leq 90^\circ$)
F_e	=	3,350	psi
Thickness	=	1.500	in.
Side Member			
Material	=	6063 T5 Aluminum	
G	=	N/A	
θ	=	90	$\leq$ (Angle of load to grain $0^\circ \leq \theta \leq 90^\circ$)
F_{es}	=	27,500	psi
Thickness	=	0.062	in.

Calculations

Lateral Bearing Factors

D	=	0.131	in.
ℓ_m	=	1.110	in.
K_θ	=	1.25	
K_D	=	2.20	
R_e	=	0.122	
R_t	=	17.90	
k_1	=	0.8734	
k_2	=	0.5981	
k_3	=	12.71	

As-Tested – Hook Strip to Wood (Continued)

Yield Mode	R_d
I_m, I_s	2.20
II	2.20
III_m, III_s, IV	2.20

Lateral Design Values, Z

Mode I_m	=	221	lbf
Mode I_s	=	102	lbf
Mode II	=	89	lbf
Mode III_m	=	106	lbf
Mode III_s	=	74	lbf
Mode IV	=	104	lbf
C_D	=	1.6	

<===== Minimum Value

Wet Service Factor

Fabrication/In-Service Dry/Dry

 C_M = 1.0

 In service temperature $T \leq 100^\circ\text{F}$
 C_t = 1.0

 C_g = 1.0

 C_{Δ} = 1.0

Is fastener installed in end grain? No

 C_{eg} = 1.00

Is fastener part of a diaphragm? No

 C_{di} = 1.0

Is fastener toe-nailed? No

 C_{tn} = 1.00

 Z' = **119** lbf

Validation of As-Tested Anchorage

Design Pressure +/- 55 psf

As-Tested Anchor Spacing: 14"

Door Height: 120"

Panel Width: 48"

Load to Jamb: $(55 \text{ psf}/144)(48"/2) = 9.2 \text{ lb/inch}$

As-tested anchor capacity: 191 lb

Maximum Spacing: $s = (191 \text{ lb})/(9.2 \text{ lb/inch}) = 20.8" > 14"$ **OK**

Minimum required anchor capacity is $(14"/20.8")(191 \text{ lb}) = 129 \text{ lb/anchor}$

Alternate Installation – Hook Strip to Steel Stud

1/4-14 TEKS Screw

0.060" thick Aluminum Hook Strip (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

Minimum 18 gauge 33 KSI Steel Stud

Allowable Shear of 1/4-14 TEKS Screw

$$P_{ss}/\Omega = 990 \text{ lb (ESR-1976)}$$

Bearing of 1/4-14 TEKS Screw on Hook Strip

$$\begin{aligned} V_a &= 2.0DtF_u/\Omega \\ V_a &= 2.0(0.250")(0.060")(22,000 \text{ psi})/3.0 \\ V_a &= 220 \text{ lb} \end{aligned}$$

Bearing of 1/4-14 TEKS Screw on Steel Stud

$$\begin{aligned} V_a &= 2.7DtF_{tu}/\Omega \\ V_a &= 2.7(0.250")(0.0428")(45,000 \text{ psi})/3.0 \\ V_a &= 433 \text{ lb.} \end{aligned}$$

Tilting of 1/4-14 TEKS Screw in Steel Stud

$$\begin{aligned} V_a &= 4.2(t_2^3 D)^{1/2} F_{tu2}/n_s \\ V_a &= 4.2(0.0428''^3 \times 0.250'')^{1/2} (45,000 \text{ psi})/3.0 \\ V_a &= 279 \text{ lb.} \end{aligned}$$

Capacity of Connection is 220 lb > 129 lb OK

Alternate Installation – Hook Strip to Aluminum Framing

1/4-14 TEKS Screw

0.060" thick Aluminum Hook Strip (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

0.053" thick Aluminum Frame (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

Allowable Shear of 1/4-14 TEKS Screw

$$P_{ss}/\Omega = 990 \text{ lb (ESR-1976)}$$

Bearing of 1/4-14 TEKS Screw on Hook Strip

$$\begin{aligned} V_a &= 2.0DtF_u/\Omega \\ V_a &= 2.0(0.250")(0.060")(22,000 \text{ psi})/3.0 \\ V_a &= 220 \text{ lb} \end{aligned}$$

Bearing of 1/4-14 TEKS Screw on Aluminum Frame

$$\begin{aligned} V_a &= 2.0DtF_{tu}/\Omega \\ V_a &= 2.0(0.250")(0.053")(22,000 \text{ psi})/3.0 \\ V_a &= 194 \text{ lb.} \end{aligned}$$

Tilting of 1/4-14 TEKS Screw in Aluminum Frame

$$\begin{aligned} V_a &= 4.2(t_2^3 D)^{1/2} F_{tu2}/n_s \\ V_a &= 4.2(0.053^3 \times 0.250")^{1/2} (22,000 \text{ psi})/3.0 \\ V_a &= 188 \text{ lb.} \end{aligned}$$

Capacity of Connection is 188 lb > 129 lb OK

Alternate Installation – Hook Strip to Concrete

1/4" DeWalt/Elco Ultracon SS4

1-3/4" Minimum Embedment; 1-1/2" Minimum Edge Distance

0.060" thick Aluminum Hook Strip (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

Minimum $f'_c = 2,500$ psi Concrete

Allowable Shear of 1/4" Ultracon SS4

$V_a = 246$ lb (NOA 19-0619.01) (interpolate embed and spacing and scale to
 $f'_c = 2,500$ psi)

Bearing of 1/4" Ultracon SS4 on Hook Strip

$V_a = 2.0DtFu/\Omega$
 $V_a = 2.0(0.193")(0.060")(22,000 \text{ psi})/3.0$
 $V_a = 170$ lb

Capacity of Connection is 170 lb > 129 lb OK

Alternate Installation – Hook Strip to CMU

1/4" DeWalt/Elco Ultracon SS4

1-3/4" Minimum Embedment; 1-1/2" Minimum Edge Distance

0.060" thick Aluminum Hook Strip (6063-T5, $F_y = 16,000$ psi, $F_u = 22,000$ psi)

Minimum ASTM C90 Grout-Filled Concrete Masonry Unit

Allowable Shear of 1/4" Ultracon SS4

$$V_a = 156 \text{ lb} \quad (\text{NOA 19-0619.01})$$

Bearing of 1/4" Ultracon SS4 on Hook Strip

$$V_a = 2.0DtFu/\Omega$$

$$V_a = 2.0(0.193")(0.060")(22,000 \text{ psi})/3.0$$

$$V_a = 170 \text{ lb}$$

Capacity of Connection is 156 lb > 129 lb OK

Comparative Analyses

Sliding Door Comparative Analysis

AAMA 2502-19

Florida Building Code 1709.5.1

International Building Code 1709.5

International Residential Building Code R609.3.1

Munfacturer: MI Windows and Doors

Product: 120MD/130MD/140MD

Test Report: 2261.01-106-11

Panel Height: 118 inch

Panel Width: 49 inch

Design Pressure: 55 psf

Test Door	DP (psf)	Panel Height (inch)	Panel Width (inch)	Load Area (ft²)	K	B	C	DP Stress (psf)	DP Defl (psf)	DP Point Load (psf)	DP (psf)	Panel Area OK?
	55	118	49	15.91	0.21	6.721	65.32					
		80	24	5.67	0.15	7.012	67.84	237.6	348.8	154.4	154.4	YES
		80	30	6.77	0.19	6.818	66.15	193.3	284.7	129.2	129.2	YES
		80	36	7.75	0.23	6.643	64.66	164.6	243.1	112.9	112.9	YES
		80	42	8.60	0.26	6.490	63.38	144.8	214.7	101.7	101.7	YES
		80	48	9.33	0.30	6.357	62.31	130.8	194.6	93.7	93.7	YES
		80	54	9.94	0.34	6.245	61.45	120.7	180.2	88.0	88.0	YES
		84	24	6.00	0.14	7.052	68.18	214.9	300.4	145.8	145.8	YES
		84	30	7.19	0.18	6.862	66.53	174.6	244.7	121.7	121.7	YES
		84	36	8.25	0.21	6.691	65.06	148.3	208.5	106.1	106.1	YES
		84	42	9.19	0.25	6.539	63.79	130.1	183.5	95.2	95.2	YES
		84	48	10.00	0.29	6.405	62.70	117.1	165.7	87.5	87.5	YES
		84	54	10.69	0.32	6.291	61.79	107.6	152.8	81.9	81.9	YES
		90	24	6.50	0.13	7.106	68.66	186.6	243.2	134.6	134.6	YES
		90	30	7.81	0.17	6.923	67.06	151.2	197.6	112.0	112.0	YES
		90	36	9.00	0.20	6.757	65.63	128.1	167.9	97.2	97.2	YES
		90	42	10.06	0.23	6.607	64.36	112.1	147.3	87.0	87.0	YES
		90	48	11.00	0.27	6.474	63.25	100.4	132.4	79.5	79.5	YES
		90	54	11.81	0.30	6.357	62.31	91.8	121.5	74.1	74.1	YES
		96	24	7.00	0.13	7.154	69.08	163.5	199.7	125.0	125.0	YES
		96	30	8.44	0.16	6.978	67.54	132.3	162.0	103.7	103.7	YES
		96	36	9.75	0.19	6.818	66.15	111.9	137.3	89.7	89.7	YES
		96	42	10.94	0.22	6.671	64.89	97.6	120.1	80.0	80.0	YES
		96	48	12.00	0.25	6.539	63.79	87.2	107.6	72.9	72.9	YES
		96	54	12.94	0.28	6.421	62.82	79.4	98.3	67.6	67.6	YES
		102	24	7.50	0.12	7.197	69.46	144.5	166.0	116.7	116.7	YES
		102	30	9.06	0.15	7.029	67.98	116.8	134.5	96.5	96.5	YES
		102	36	10.50	0.18	6.873	66.62	98.6	113.7	83.3	83.3	YES
		102	42	11.81	0.21	6.730	65.39	85.8	99.2	74.1	74.1	YES
		102	48	13.00	0.24	6.599	64.29	76.4	88.6	67.3	67.3	YES
		102	54	14.06	0.26	6.482	63.32	69.4	80.7	62.2	62.2	YES
		108	24	8.00	0.11	7.236	69.81	128.6	139.5	109.4	109.4	YES
		108	30	9.69	0.14	7.074	68.38	103.9	112.9	90.3	90.3	YES
		108	36	11.25	0.17	6.923	67.06	87.5	95.3	77.8	77.8	YES
		108	42	12.69	0.19	6.784	65.86	76.0	83.0	69.0	69.0	YES
		108	48	14.00	0.22	6.656	64.76	67.6	74.0	62.5	62.5	YES
		108	54	15.19	0.25	6.539	63.79	61.2	67.2	57.6	57.6	NO
		114	24	8.50	0.11	7.272	70.13	115.3	118.4	102.9	102.9	YES
		114	30	10.31	0.13	7.116	68.74	93.0	95.7	84.8	84.8	YES
		114	36	12.00	0.16	6.970	67.46	78.3	80.7	72.9	72.9	YES
		114	42	13.56	0.18	6.834	66.29	67.9	70.1	64.5	64.5	YES
		114	48	15.00	0.21	6.708	65.21	60.3	62.4	58.3	58.3	YES
		114	54	16.31	0.24	6.593	64.24	54.5	56.5	53.6	53.6	NO

Sliding Door Comparative Analysis

AAMA 2502-19

Florida Building Code 1709.5.1

International Building Code 1709.5

International Residential Building Code R609.3.1

Manufacturer: MI Windows and Doors

Product: 120MD/130MD/140MD

Test Report: 2261.01-106-11

Panel Height: 118 inch

Panel Width: 49 inch

Design Pressure: 55 psf

Test Door	DP (psf)	Panel Height (inch)	Panel Width (inch)	Load Area (ft ²)	K	B	C	DP Stress (psf)	DP Defl (psf)	DP Point Load (psf)	DP (psf)	Panel Area OK?
	55	118	49	15.91	0.21	6.721	65.32					
		118	24	8.83	0.10	7.294	70.32	107.5	106.6	99.0	99.0	YES
		118	30	10.73	0.13	7.141	68.97	86.6	86.1	81.5	81.5	YES
		118	36	12.50	0.15	6.998	67.72	72.9	72.6	70.0	70.0	YES
		118	42	14.15	0.18	6.865	66.56	63.2	63.0	61.9	61.9	YES
		118	48	15.67	0.20	6.741	65.49	56.0	56.0	55.8	55.8	YES
		118	54	17.06	0.23	6.627	64.52	50.6	50.6	51.3	50.6	NO
		120	24	9.00	0.10	7.304	70.41	103.9	101.3	97.2	97.2	YES
		120	30	10.94	0.13	7.154	69.08	83.7	81.8	80.0	80.0	YES
		120	36	12.75	0.15	7.012	67.84	70.4	68.9	68.6	68.6	YES
		120	42	14.44	0.18	6.880	66.69	61.0	59.8	60.6	59.8	YES
		120	48	16.00	0.20	6.757	65.63	54.1	53.1	54.7	53.1	YES
		120	54	17.44	0.23	6.643	64.66	48.8	48.0	50.2	48.0	NO
		126	24	9.50	0.10	7.334	70.68	94.1	87.4	92.1	87.4	YES
		126	30	11.56	0.12	7.189	69.39	75.8	70.5	75.7	70.5	YES
		126	36	13.50	0.14	7.052	68.18	63.7	59.3	64.8	59.3	YES
		126	42	15.31	0.17	6.923	67.06	55.1	51.4	57.1	51.4	YES
		126	48	17.00	0.19	6.803	66.02	48.8	45.6	51.5	45.6	NO
		126	54	18.56	0.21	6.691	65.06	43.9	41.2	47.1	41.2	NO
		132	24	10.00	0.09	7.361	70.92	85.7	75.9	87.5	75.9	YES
		132	30	12.19	0.11	7.221	69.67	68.9	61.2	71.8	61.2	YES
		132	36	14.25	0.14	7.088	68.50	57.9	51.5	61.4	51.5	YES
		132	42	16.19	0.16	6.963	67.41	50.1	44.6	54.1	44.6	YES
		132	48	18.00	0.18	6.846	66.39	44.3	39.5	48.6	39.5	NO
		132	54	19.69	0.20	6.736	65.45	39.8	35.6	44.4	35.6	NO
		138	24	10.50	0.09	7.387	71.15	78.3	66.4	83.3	66.4	YES
		138	30	12.81	0.11	7.251	69.94	63.0	53.5	68.3	53.5	YES
		138	36	15.00	0.13	7.122	68.80	52.8	44.9	58.3	44.9	YES
		138	42	17.06	0.15	7.000	67.73	45.7	38.9	51.3	38.9	NO
		138	48	19.00	0.17	6.886	66.73	40.3	34.4	46.0	34.4	NO
		138	54	20.81	0.20	6.778	65.81	36.2	31.0	42.0	31.0	NO
		144	24	11.00	0.08	7.410	71.35	71.9	58.3	79.5	58.3	YES
		144	30	13.44	0.10	7.279	70.19	57.8	47.0	65.1	47.0	YES
		144	36	15.75	0.13	7.154	69.08	48.4	39.4	55.6	39.4	YES
		144	42	17.94	0.15	7.035	68.04	41.8	34.1	48.8	34.1	NO
		144	48	20.00	0.17	6.923	67.06	36.9	30.2	43.7	30.2	NO
		144	54	21.94	0.19	6.818	66.15	33.1	27.1	39.9	27.1	NO

Product Line Glazing Analysis

ASTM E1300 Evaluation of non-Impact Glass

DLO Height (in)	Glazing Strength (psf) for DLO Width (inch)					
	15	21	27	33	39	45
71	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
75	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
81	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
87	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
93	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
99	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	-
105	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	-
109	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	-
111	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	-
117	> 82.5	> 82.5	> 82.5	> 82.5	-	-
123	> 82.5	> 82.5	> 82.5	> 82.5	-	-
129	> 82.5	> 82.5	> 82.5	-	-	-
135	> 82.5	> 82.5	> 82.5	-	-	-

Notes: 1. Glazing strengths will not limit non-impact product.

ASTM E1300 Evaluation of Impact Glass

DLO Height (in)	Glazing Strength (psf) for DLO Width (inch)					
	15	21	27	33	39	45
71	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
75	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5
81	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	80.2
87	> 82.5	> 82.5	> 82.5	> 82.5	> 82.5	74.4
93	> 82.5	> 82.5	> 82.5	> 82.5	77.2	68.8
99	> 82.5	> 82.5	> 82.5	> 82.5	71.7	-
105	> 82.5	> 82.5	> 82.5	> 82.5	69.5	-
109	> 82.5	> 82.5	> 82.5	> 82.5	68.3	-
111	> 82.5	> 82.5	> 82.5	> 82.5	67.8	-
117	> 82.5	> 82.5	> 82.5	> 82.5	-	-
123	> 82.5	> 82.5	> 82.5	> 82.5	-	-
129	> 82.5	> 82.5	> 82.5	-	-	-
135	> 82.5	> 82.5	> 82.5	-	-	-

Notes: 1. Glazing strengths exceed the 55 psf limit on impact resistant products.
 2. Values reported for weaker insulating glass qualify heavy insulating glass.

Appendix A

Revision Log

<u>Identification</u>	<u>Date</u>	<u>Page & Revision</u>
Original Issue	12/11/23	Not Applicable