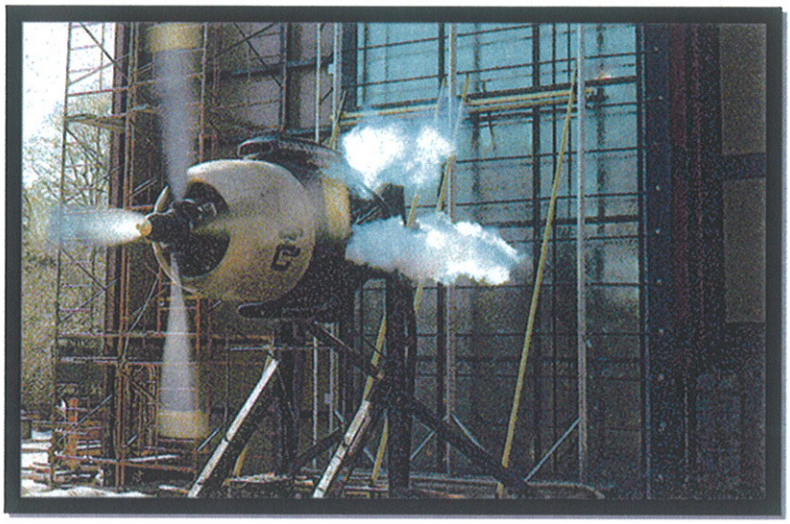
CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*



TEST REPORT:

AAMA/WDMA/CSA 101/I.S.2/A440-08
Series 420 Sliding Glass Door
Report #CCLI-12-119

July 25, 2012

Prepared for:

MI WINDOWS AND DOORS, LLC.
1001 West Crosby Road
Carrollton, TX 75006

1601 Luna Road
Carrollton, Texas 75006

S-UNITED, INC.
A Quality Control Company

Office: (972) 242-0556
FAX: (972) 245-6047

Glass Load Resistance Report --

Tuesday, June 9, 2015

Glazing Information

Edge Supports: 4 Sides
Glazing Angle: 90°
Lite Dimensions:
Width: 48.0 in.
Height: 80.0 in.

Project Details

Project Name:
Location:
Comments:

Glass Construction (Rectangular)

Single Glazed Lite

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

Short Load Duration, Resistance, and Deflection Data

Load (~ 3 sec.): 10.0 psf
Load Resistance: 125 psf
Approximate center of glass deflection: 0.4 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.

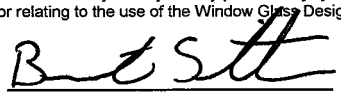
Disclaimer:

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.

Neither SDG nor GANA guarantees and each disclaims any responsibility for any particular results relating to the use of the Window Glass Design 5 Software Program. SDG and GANA disclaim 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 Window Glass Design 5 Software Program.

Prepared by:  on 6/9/2015

Glass Load Resistance Report --

Tuesday, June 9, 2015

Glazing Information

Edge Supports: 4 Sides
Glazing Angle: 90°
Lite Dimensions:
Width: 48.0 in.
Height: 80.0 in.

Project Details

Project Name:
Location:
Comments:

Glass Construction (Rectangular)

Double Glazed Insulating Unit

Air Space: 0.5 in.

	Outboard Lite	Inboard Lite
Glass Type:	Fully Tempered	Fully Tempered
Nominal Thickness:	1/8 in.	1/8 in.

Short Load Duration, Resistance, and Deflection Data

Load (~ 3 sec.):	125 psf
Load Resistance:	130 psf
Approximate center of glass deflection:	1.52 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.

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.
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- The software user has the responsibility of selecting the correct procedures for the required application from the software.
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Prepared by: _____ on 6/9/2015

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APPENDIXES

APPENDIX A: SERIES 420 SLIDING GLASS DOOR PRODUCT DRAWINGS

Note: This product also labeled under name BB420/BB42P/BB430/BB43P/BB440/BB44P

Refer to Mock-Up drawings in **Appendix A**, this report is not complete unless this drawing is stamped and initialed by **CCLI** as illustrated below.

Die	Detail	Date	Stamped as Illustrated
	Bill of materials	8/15/08	
420Assy	Lay-out/Section	8/13/08	
4208	Frame Head	2/17/98	
4210	Frame Jamb	2/21/98	
4209	Frame Sill	2/17/98	
4202	Panel Top Rail	2/17/98	
4204	Panel Interlock Stile	2/17/98	
4206	Panel Lock Stile	2/18/98	
4200	Panel Bottom Rail	2/10/98	
4222	Panel Sill Retainer	3/17/98	
668	Internal Interlock Reinforcement	3/19/04	
4237	External Interlock Reinforcement	5/22/06	
9917195	Panel Roller	4/15/98	
9915065	Panel Guide Lock Stile	5/15/98	
9915060	Panel Guide Interlock	5/15/98	
80024202	Glazing Gasket	4/6/98	
4217	Screen Head	3/12/98	
4218	Screen Sill	3/12/98	
4219	Screen Jamb	3/12/98	
4220	Screen Latch Jamb	3/12/98	

CONSTRUCTION CONSULTING LABORATORY, INTERNATIONAL
1601 Luna Road
Carrollton, Texas 75006
Phone (972) 242-0556
Report# 12-119, Date 7-25-12
Reviewed BY GW

1. PROJECT DATA

Project:	AAMA/WDMA/CSA 101/I.S.2/A440-08 MI Windows and Doors, LLC. Series 420 Sliding Glass Door
Date(s) of Testing:	June 22, 2012
Tested For:	MI Windows and Doors, LLC.
Witnessed By:	(All or Partial Viewing)
Taylor Rix	MI Windows and Doors, LLC.
Zack Cunningham	Construction Consulting Laboratory, *International*

2. SCOPE

Series	Product Type	Test Size	Positive DP	Negative DP
420	Sliding Glass Door with Reinforcement	8'-0" x 8'-0"	1680 Pa (35 Psf)	1680 Pa (35 Psf)
420	Sliding Glass Door with Reinforcement and Adapter	8'-0" x 8'-0"	1920 Pa (40 Psf)	1920 Pa (40 Psf)
420	Sliding Glass Door without Reinforcement	8'-0" x 6'-8"	1920 Pa (40 Psf)	1920 Pa (40 Psf)

3. TEST SPECIMEN

Product Type: Aluminum Sliding Glass Door, **Product Drawings, Appendix A**
Series Model: Series 420 Sliding Glass Door (SGD)
Specifications: AAMA/WDMA/CSA 101/I.S.2/A440-08
Specimen #1: **With Internal Reinforcement:**
SGD-R35 2438mm x 2438mm (96 x 96)

Specimen #1a: **With Internal & External Reinforcement:**
SGD-R40 2438mm x 2438mm (96 x 96)
Frame Size: 2438mm x 2438mm (8'-0" x 8'-0")
Panel Size: 1232mm x 2413mm (4'-1/2" x 7'-11")
Operable DLO: 1136.6mm x 2301.8mm (3'-8 5/8" x 7'-6 5/8")

Specimen #2: **Without Reinforcement:**
SGD-R40 2438mm x 2032mm (96 x 80)
Frame Size: 3718mm x 2032mm (8'-0" x 6'-8")
Panel Size: 1231.9mm x 2006.6mm (4'-1/2" x 6'-7")
Operable DLO: 1133mm x 1889.12mm (3'-8 5/8" x 6'-2 5/8")
Configuration: X.X
Glass: 4.76mm (3/16") tempered.

Glazing: Marine Glazed.

Weather Strip: Two (2) rows pile weather strip 6.35mm (.250" thick) with integral plastic fin at the interior and exterior face of panel top rail center pocket. Two (2) rows pile weather strip 10.9mm (.430" thick) with side plastic fin at the interior and exterior face of panel bottom rail center pocket. One (1) row pile weather strip 6.8mm (.270" thick) with integral felt fin located at interior and exterior face of panel jamb stiles. One (1) row pile weather strip 4.57mm (.180" thick) at the interior and exterior face of panel interlock stile. Pile pad located at underside of fixed interlock. Weather strip adhesive backed dust plug 25.4 x 12.7mm (1" x ½") at each end of panel interlock at frame head and sill.

Hardware: Flat mounted handle set part # 99-04-145 located 984mm (38¾") on center from panel bottom with keeper attached to astragal with two (2) to #8 x 12.7mm ($^1/_2$") screws. Metallic tandem rollers part # 99-17-195 at each end of panel bottom rails.

Weep Arrangement: Panel roller tracks notched 12.7mm (½") x leg height at each end. Screen roller track notched 22.8mm (.900") x 6.35mm (.25") at each end with 12.7mm (½") x leg height removed at each end creating a step effect.

Narrow Joint Sealant: Interior leg to frame jamb sealed. Exterior lateral face of frame jamb- to- frame sill.

Reinforcement: Specimen 1, R35 96" x 96" internal reinforcement. Specimen 1a, R40 96" x 96" internal and external reinforcement. Specimen 2, R40 96" x 80" no reinforcement. Part # 668 aluminum 6063-T6 square tube 3.04mm (.120") inserted into panel interlocks. Part # 4237 aluminum 6063 T5 interlock adaptor at the interior face of operable panel interlock attached with eight (8) #8 x 12.7mm (½") screws 127mm (5") from each end and on 305mm (12") centers.

Installation: Frame was attached to a #2, 50.8mm x 254mm (2" x 10") yellow pine test buck with silicone and #10 x 44.5mm ($1^3/_4$") screws, two (2) rows spaced 139.7mm (5½") from each end and on approximate 432mm (17") centers at head and jambs. Sill was attached to test buck with #10 x 32mm ($1^1/_4$") flat head screws spaced 140mm ($5^1/_2$") from each end and on 572mm ($22^1/_2$") centers and capped with silicone. The 2 x 10 test buck was installed within a nominal 2 x 12 test fixture for installation onto test wall.

Other Features: Frame members are attached by two (2) #8 x 15.8mm ($^5/_8$") screws per corner. Panel jamb stile-to-rail members are attached with two (2) #6 x 19.05mm (¾") square drive screws per connection. Panel interlocks attached to bottom rail with one (1) #6 x 19.05mm (¾") screws and one (1) ¼-20 x 19.05mm (¾") machine screw through interlock into roller housing. Roller housing also attached to panel bottom rail with one (1) # 10 x 12.7mm (½") screw through bottom rail glazing pocket. One (1) aluminum sill retainer clip per panel, part # 4222, located at fixed and moving panel bottom rail attached with (2) #6 x 9.5mm (3/8") screws.

4. PERFORMANCE RESULTS

Note: Operating, Air infiltration, Water resistance, Deglazing, and Forced Entry Resistance was performed on an 8'0" door with No Reinforcements (Internal or External)

Paragraph No.	Title of Test	Test Method	Measured	Allowed
5.3.1.1.1	Operating Force			
	Breakaway		53.4N (12 lbs)	88.96N (30 lbs)
	Operating		17.8N (4 lbs)	88.96N (20 lbs)
5.3.1.1.3	Latching Devices	A440-05	8.9N (2 lbs)	100N (22.5 lbs)
5.3.2.1	Air Infiltration	ASTM E 283-04		
	@ 75.17 Pa (1.57 psf)		1.45 L/s•m² (.29 cfm/sf)	1.5 L/s•m² (0.30 cfm/sf)

Note: Air infiltration values meet the minimum requirements of the specification. Values were listed by request of the manufacturer.

5.3.3.2	Water Resistance	ASTM E 547 & 331-02		
	@288Pa (6.0 psf) with screen		No Leakage	No Leakage
	@288Pa (6.0 psf) w/out screen		No Leakage	No Leakage
5.3.4.2	Uniform Load			
Specimen 1	Deflection	ASTM E 330-02		
	Interlock			
	-1680Pa (35 psf) Positive		30.5mm (1.2")	Reported
	-1680 Pa (35 psf) Negative		30.5mm (1.2")	Reported
5.3.4.3	Uniform Load			
	Structural	ASTM E 330-02		
Specimen 1	- 2520Pa (52.5 psf) Positive		No Damage	No Damage
	- 2520Pa (52.5 psf) Negative		No Damage	No Damage
	-Permanent Set		.8mm (.03")	9.8mm (0.384")
5.3.4.2	Uniform Load			
Specimen 1a	Deflection	ASTM E 330-02		
	Interlock			
	-1920Pa (40.0 psf) Positive		23.9mm (.94")	Reported
	-1920Pa (40.0 psf) Negative		24.9mm (.98")	Reported
5.3.4.3	Uniform Load			
Specimen 1a	Structural	ASTM E 330-02		
	-2880Pa (60.0 psf) Positive		No Damage	No Damage
	-2880Pa (60.0 psf) Negative		No Damage	No Damage
	-Permanent Set		1.01mm (.04 ")	9.8mm (0.384")

Paragraph No.	Title of Test	Test Method	Measured	Allowed
5.3.5	Forced Entry Resistance Grade Type A Door	ASTM F 842-04	No Entry	No Entry
5.3.6.3	Deglazing Test	ASTM E 987		
	-Top Rail @ 230 N (50 lbs)		4%	90%
	-Bottom Rail @ 230 N (50 lbs)		6%	90%
	-Int. Lock Stile @ 320 N (70 lbs)		4%	90%
	-Meeting Rail @ 320 N (70 lbs)		9%	90%
	-Ext. Lock Stile @ 320 N (70 lbs)		8%	90%
5.3.4.2 **Specimen 2**	Uniform Load Deflection	ASTM E 330-02		
	-1920Pa (40.0 psf) Positive		18mm (.72")	Reported
	-1920Pa (40.0 psf) Negative		16.8mm (.66")	Reported
5.3.4.3 **Specimen 2**	Uniform Load Structural	ASTM E 330-02		
	-2880Pa (60.0 psf) Positive		No Damage	No Damage
	-2880Pa (60.0 psf) Negative		No Damage	No Damage
	-Permanent Set		negligible	8.1mm (0.320")

Detailed extrusion and assembly drawings indicating measured wall thickness and corner construction are on file and have been compared to the test sample submitted. These records will be retained at **CCLI** for a period of four years.

5. CONCLUSION

The above results were achieved by using the designated test methods and indicate compliance with the above specification. This report does not constitute certification of this product.

Respectfully submitted,

CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*

WESLEY WILSON
LABORATORY MANAGER

JEFFREY CRUMP
TESTING MANAGER

APPENDIX A

PRODUCT DRAWINGS

Die	Detail	Date
	Bill of materials	8/15/08
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4208	Frame Head	2/17/98
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4220	Screen Latch Jamb	3/12/98

- END OF REPORT -