Fenestration Testing Laboratory, Inc.
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REPORT SUMMARY

REPORT SPECIFICATION:
North American Fenestration Standard/specification for windows, doors, and skylights
AAMA/WDMA/CSA 101/I.S.2/A440-08 & Canadian Supplement A440S1-09

REPORT #: T16-028

TESTED FOR:
Panoramic Doors / Magnaline Systems
2515 Industry Street
Oceanside, CA 92054

PRODUCT TYPE: Stacking Door System

SERIES: Absolute PVC Panel W/Aluminum Tracks

CONFIGURATION: XXXX

PERFORMANCE GRADE: PG 30

PRIMARY DESIGNATOR:
PG30: Size tested 3835 x 2438 mm (~151 x 96") - Type SP

Secondary Designator:
Canadian Air Infiltration/exfiltration = A2 Level

TEST COMPLETION DATE: 04/8/2016

REPORT DATE: 05/09/2016

Reference should be made to Report No. T16-028 for complete test specimen description and data.

1.0 Tested For: Panoramic Doors / Magnaline Systems
2515 Industry Street
Oceanside, CA 92054

2.0 Purpose:
The purpose of this report is to present the testing methods employed and the test results obtained during the performance testing of one (1) PVC Stacking Door System described in paragraph 5.0 of this report.

3.0 Test References:

3.1 NAFS – North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-08

3.2 Air Infiltration/Exfiltraiton - A440S1-09, Canadian Supplement to AAMA/WDMA/ CSA 101/I.S.2/A440

4.0 Compliance Statement: The test results in paragraph 6.0 indicate that the test sample described in paragraph 5.0 of this report met the performance requirements of the above specifications for the performance grade shown in 4.1 and 4.2 below.

4.1 Primary Designator:
PG30: Size tested 3835.4 x 2438.4mm (~151 x 96") - Type SP

4.2 Secondary Designator:
Canadian Air Infiltration/exfiltration = A2 Level

5.0 Sample Submitted (All references to left and right are as seen from the exterior view. The panels are numbered 1, 2, 3, and 4 from left to right)

5.1 Product Type: Stacking Door System

5.2 Series/Model: Absolute PVC Panel W/Aluminum Tracks

5.3 Configuration XXXX (Panels 1-3 slide to the right and swing out. Panel 4 pivots on the jamb and swings out)

5.4 Test Sample Provider: Panoramic Doors / Magnaline Systems

5.5

Product Size:	Millimeters	Inches
Frame:	3835 mm x 2438 mm	151.00" x 96.00"
Panels	918 mm x 2353 mm	36.13" x 92.63"

5.6 Glass and Glazing (Applies to all panels)

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1.0" Overall IG	3/4" Super Spacer (Tremco)	1/8" clear tempered	1/8" clear tempered	Outside glazed with 0.125" x 0.375" double sided adhesive foam tape. Plastic setting blocks were placed at quarter points on the bottom and four (4) blocks were evenly spaced at each stile. A Silicone cap bead was applied along the bottom rail to glass on the inside and up the stiles 6". A heal bead was applied across bottom rail and up stiles on the exterior. Snap-in PVC stop applied full perimeter with 0.185" x 0.375" double sided adhesive foam tape to glass.

5.7 Weepage

Draining Method	Size	Quantity	Location
Weep holes	9.46 mm (3/8")	12	Sill outside face - one at 6" in from each end and the remainder evenly distributed
Vertical Weep holes	12.7mm (1/2")	2 per panel	One at each end of the bottom rail of each panel; drilled straight through from glazing pocket to bottom wall

5.8 Weatherstripping

Type:	Quantity	Location
0.270 x 0.450 Poly-pile with center fin	2 strips	Head - one strip facing out and one strip facing down. Sill - one strip facing out and one strip facing up.
0.187 x 0.340 Poly-pile	2 strips	Lock stile panel #4
Nub gasket	2 strips	Panels #1, 2 and 3 left stile
Angle gasket	1 strip	Panel #3 on right stile
Angle gasket	2 strips	Right jamb

5.9 Hardware

Type:	Quantity	Location/ Discription
Track guides (magnetic)	3	Panels # 1,2,3 Head (floating) one per panel; moved along the operable channel
Track guides	3	Sill (floating); moved along the operable channel
Roller assembly	6	Panels #1, 2, and 3 - one at each end of each panel's bottom rail; Only the roller assembly on right side of each panel had a pivot pin hole
Pivot block assembly	3	Panels # 1, 2, and 3 - one at the top of each panel's right stile
Track locator assembly (similar to a shoot bolt)	3	Panels 1, 2, and 3 - one at the top end of each panel's left stile. Each pin engaged like a spring loaded latch. Each pin was disengaged with a spring loaded thumb actuator on the same stile.
Pivot Pin assembly	2	One at the top and one at the bottom of panel #4 hinge stile
PVC pull handle	1	Panels #1, 2, and 3 - each on left stile
PVC end caps	4	One at each end of the sill - each end cap was sealed and fastened with a pair of screws.
PVC snubber block	1	Fastened to the midspan of panel #4 hinge stile with a pair of screws. The block mated to the jamb channel when the door was closed.

5.9 Hardware (Continued)

Type:	Quantity	Location/ Discription
Four point lock and handle	1	The handle operated three lock points - the 2 hooks (one hook at 10" from the top and the other hook at 11" from the bottom) and the latch bolt at 39" from the bottom. The 4th lock point was a keyed dead bolt operated by a thumb turn located 34.5" from the bottom. Each hook engaged its respective metal keeper fastened to panel 3 right stile. Each keeper was fastened with a pair of screws.

5.10 Construction

Location	Joinery Type	Number of Fasteners/ Discription
PVC jambs Aluminum Head and Sill	Butted and tennon joint	- A PVC tenon was inserted over each end of each jamb. The tenon fit into the active channel of the head and sill. [The head, sill and jambs were not fastened to each other; they fastened to the rough opening.]
Panel Corners	Mechanical	Two (2) - #8 x 2.5" PFH screws
Interlocking aluminum extrusions on stiles of all panels	Mechanically joined to PVC panel stiles	Panels 1, 2, and 3 each contained a full length male extrusion fastened to each left stile. All four panels contained a full length female extrusion fastened to each right stile.

5.11 Reinforcement

Location	Material
All panel rails and stiles have aluminum extrusions part #AZ783	Aluminum
Plastic blocks were inserted approximately 6" into each end of the reinforcement at the styles only.	Plastic

5.12 Sealant

Location
All frame corner joints and all PVC tenons to each end of jamb.
All sill installation screws.
All panel corner joints and all glazing stop to glazing stop joints.

5.13 Installation

The test specimen was installed into a 2" x 12" wooden rough opening.

Location on frame	Anchor type	Spacing
Head	Eighteen (18) #8 x 3" PFH screws.	First three (3) from right spaced 2.5" apart starting 6" from right edge and the rest were evenly spaced in the field.
Sill	Ten (10) #8 x 3" PFH screws	First three (3) from right spaced 2.5" apart starting 7" from right edge and the rest were evenly spaced in the field.
Jambs	Eight (8) #8 x 3" PFH screws.	Two (2) 6" from top and bottom and the rest evenly spaced in the field.

6.0 Test Procedures and Results: All testing procedures were conducted in accordance with the performance requirements of the test specifications referenced in paragraph 3.0 of this report. (Laboratory conditions during test were 23.8 degrees Celsius (75 degrees Fahrenheit))

6.4.1 - Force-to latch for side hinged door systems

Test Description	Results	Allowed
Force-to-latch	129.00 N (29.0 lbf)	Report only
Force-to-engage dead bolt	40.03 (9.0 lbf)	115 N (25.85 lbf)

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration**

Test Pressure	Results	Allowed
75 Pa	0.85 L/s*sq.m	1.5 L/s*sq.m
1.57 psf	0.17 cfm/sq.ft.	0.30 cfm/sq.ft.
The tested specimen meets (or exceeds) the performance requirements specified in AAMA/WDMA/CSA 101/ I.S.2/A440 for air leakage resistance.		

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Exfiltration - Canada**

Test Pressure	Results	Allowed
75 Pa	0.75 L/s*sq.m	1.5 L/s*sq.m
1.57 psf	0.15 cfm/sq.ft.	0.30 cfm/sq.ft.
The tested specimen meets (or exceeds) the A2 Level Canadian air exfiltration performance requirements specified in A440S1-09, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.		

9.3.3 **Water Penetration** (ASTM E 547-00) (2009)

Test Pressure	Results	Allowed	Comments
220 Pa (4.59 psf)	No Leakage	No Leakage	

9.3.4.2 **Uniform Load Deflection at Design Pressure** (ASTM E 330-14)

Test Pressure & Direction	Results	Allowed	Comments
1440 Pa (30.08 psf) Pos	42.42 mm (1.67")	Report Only	
1440 Pa (30.08 psf) Neg	52.32 mm (2.06")	Report Only	

9.3.4.3 **Uniform load Structural Performance (Overload/Proof Load)** (ASTM E 330-14)

Test Pressure & Direction	Results	Allowed	Comments
2160 Pa (45.11 psf) Pos	1.27 mm (0.05")	9.40 mm (0.37")	
2160 Pa (45.11 psf) Neg	0.51 mm (0.02")	9.40 mm (0.37")	

9.3.5 Forced Entry Resistance - (Applied FER test for SGD and for Side-hinged doors

FER For SGD	Results	Allowed	Comments
ASTM F 842-14 Type A Grade 10	No Entry	No Entry	
CAWM 300-96 Type I	No Entry	No Entry	
FER for Side-Hinged Doors	Results	Allowed	Comments
AAMA 1304-02	No Entry	No Entry	

Additional Testing:

9.3.3 **Water Penetration** (ASTM E 547-00) (2009)

Test Pressure	Results	Allowed	Comments
360 Pa (7.52 psf)	No Lekage	No Leakage	

For a complete description of the tested sample refer to the attached eighteen (18) pages consisting of the bill of materials, cross section drawings, and individual die drawings. This report is complete only when all of the above referenced drawings and bill of materials are attached.

Cross section drawings and die drawings of frame members are on file and have been compared to the sample submitted. Test sample sections, drawings and a copy of this report will be retained at the test laboratory for four years.

This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory.

The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in sections 3.0 and 6.0 above. This report does not constitute certification of this product or an endorsement by this laboratory. It is the property of the client named in section 1.0 above. Certification can only be granted by an approved administrator and/or validator.

Date Testing Completed:	April 6, 2016
Date Report Completed:	May 28, 2016

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