

**TEST REPORT**  
**AAMA/WDMA/CSA 101/I.S.2/A440-11**

**Rendered to:**

**Merrill Millwork, Inc**

**PRODUCT TYPE: Sliding Door**  
**SERIES/MODEL: Park Vue Aluminum Clad Sliding Patio Door**

<b>Test Procedure</b>	<b>Details</b>
AAMA/WDMA/CSA 101.I.S.2/A440-11	Class LC - PG25: Size Tested 2440 x 2090 mm (~96 x 82 in) - Type SD
Air Infiltration per ASTM E283-12	.930 L/s/m <sup>2</sup> (.183 cfm/ft <sup>2</sup> ) @ 75 Pa (1.57 psf), PASS
Candaian Air Infiltration/Exfiltration per ASTM E283	.910 L/s/m <sup>2</sup> (.179 cfm/ft <sup>2</sup> ) Average @ 75 Pa (1.57 psf), Level A2
Water Penetration Test per ASTM E547-09	No Entry @ 220 Pa (4.59 psf), PASS
Uniform Load Deflection per ASTM E330-10	±1200 Pa (25.1 psf), PASS
Uniform Load Structural per ASTM E330-10	±1800 Pa (37.6 psf), PASS
Forced Entry per ASTM F842-14	Grade 10, Assembly A, PASS
Operating Force per ASTM E2068-08	See Results, PASS
Deglazing Test (NAFS 9.3.6.3)	See Results, PASS

**Test Completion Date(s):** 12/23/2014  
-02/23/2015

Reference must be made to Report No. QCT14-3443.01, dated 03/26/2015 for complete specimen description and data.

**QUAST CONSULTING AND TESTING, INC.**

Exterior Facade/Fenestration Consulting Testing

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AAMA/WDMA/CSA 101/I.S.2/A440-11

TEST REPORT

Rendered to:

Merrill Millwork, Inc  
1300 West Taylor Street  
Merrill, WI 54452

Report No.: QCT14-3443.01

Test Dates: 12/23/2014

Through: 02/23/2015

Report Date: 03/26/2015

**Project Summary:**

Quast Consulting and Testing, Inc. was contracted by Merrill Millwork, Inc. to perform testing on a Park Vue Clad Sliding Patio Door. The sample supplied by Merrill Millwork were tested and met the performance requirements set forth in the referenced test procedures for a DP +/- 25 psf. Test specimen description and results are reported herein.

**Test Procedure:**

Testing was conducted in accordance with:

<b>ASTM E283-12</b>	<i>Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen</i>
<b>ASTM E330-10</b>	<i>Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference</i>
<b>ASTM E547-09</b>	<i>Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference</i>
<b>ASTM F842-14</b>	<i>Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact</i>
<b>ASTM E2068-08</b>	<i>Test Method for Determination of Operating Force of Sliding Windows and Doors</i>

**NAFS Primary Designator(s):**

AAMA/WDMA/CSA 101.I.S.2/A440-11

Class LC - PG25: Size Tested 2440 x 2090 mm  
(~96 x 82 in) - Type SD**NAFS Secondary Designator(s):**

Water Penetration Pressure:

220 Pa (4.59 psf)

**Test Specimen Description:**

<b>Series/Model:</b>	Park Vue Aluminum Clad Sliding Patio Door
<b>Product Type:</b>	Sliding Door
<b>Overall Size:</b>	2435 mm (95.88 in) wide x 2086 mm (82.13 in) high
<b>Overall Area:</b>	5.08 m <sup>2</sup> (54.68 ft <sup>2</sup> )
<b>Both Sash:</b>	1295 mm (51.00 in) wide x 2032 mm (80.00 in) high

**Frame Construction:**

The molded pine frame members were coped, sealed and secured using 3 #9 x 64 mm (2-1/2 in) PFH WS fasteners. The aluminum frame cladding was mitered, glued, and secured at the corners using #6 x 38 mm (1-1/2 in) PFH MS fasteners. The PVC nailing flange was mitered and siliconed at the corners and dart-fitted into the aluminum frame cladding. The parting stop was secured using GSN 18 x 1-1/2 in staples spaced 305 - 356 mm (12 - 14 in) on center. The interior stop was secured at the jambs using GSN 18 x 1-1/2 in staples spaced 305 - 356 mm (12-14 in) on center and secured at the head using #6 x 32 mm (1-1/4 in) PFH WS fasteners spaced 305 mm (12 in) on center. The sash stabilizer at the head was secured using #6 x 25 mm (1 in) PRH WS fasteners. The extruded fiberglass sill was siliconed to the buck. The proprietary weep system was affixed to both ends of the sill with an epoxy adhesive. The weep system was sealed to the jamb using silicone.

**Sash Construction:**

The molded pin sash members were square cut, sealed and secured using 1-1/4" 16 Ga finish dowels. The aluminum sash cladding was square cut and secured using GSN 18-1/2 in staples. The cladding at the free stile of the fixed sash was sealed and dart-fitted into the wood member. The PVC sash interlocks were secured to the sash stiles using #7 x 32 mm (1-1/4 in) PFH WS fasteners spaced 305 mm (12 in) on center.



**Glazing:**

The window was glazed using a 19.1 mm (3/4 in) insulated lite comprised of 3.2 mm (1/8 in) annealed, 12.7 mm (1/2 in) air space with stainless steel spacer, 3.2 mm (1/8 in) annealed. The lite was installed from the interior against a bead of silicone and secured on the interior with a wood glazing stop fastened with 31.8 mm (1-1/4 in) wire brads spaced 254 mm (10 in) on center.

**Finish:** Mill Finish

**Reinforcement:** None

**Weatherstripping:**

<u>Type</u>	<u>Quantity</u>	<u>Location</u>
.380" Pile Weatherstrip	2 Rows	Sash still interlock
Vinyl Parting Stop Profile by Amesbury	1 Row	Jamb and head parting stops
Vinyl Interior Stop Profile	1 Row	Jamb and head interior stops

**Hardware:**

<u>Type</u>	<u>Quantity</u>	<u>Location</u>
Truth Sash Rollers	2	Bottom of active sash
Truth Two-Point Lock Assembly	1	Center of active stile

**Drainage:**

<u>Type</u>	<u>Quantity</u>	<u>Location</u>
Proprietary weep system with 3/8" x 1/4" weeps with flap covers	2	Both ends of sill

**Installation:**

The specimen was installed into a nominal 2x6 pine buck with a 6.4 mm (1/4 in) rough opening at the jambs and a 12.7 mm (1/2 in) rough opening at the head. The specimen was anchored through the nail fin with #8 x 32 mm (1-1/4 in) PFH WS fasteners spaced 89 mm (3-1/2 in) on center. The head was also anchored through the frame with 3 3-inch dry wall screws at midspan and quarter points.

**Test Results:**

<u>Paragraph</u>	<u>Title of Test</u>	<u>Results</u>	<u>Allowed</u>
<b>9.3.1</b>	<b>Operational Force Test Per ASTM E2068-08</b>		
	<b>Operable Sash</b>	<b>PASS</b>	
	Breakaway Force	125.3 N (28.17 lbf)	135 N (30.35 lbf)
	Open Operating Force	87.3 N (19.63 lbf)	90 N (20.23 lbf)
	Closing Operating Force	75.5 N (16.97 lbf)	90 N (20.23 lbf)
	<b>Latch #1</b>	<b>PASS</b>	
	Open Operating Force	4.7 N (1.05 lbf)	100 N (22.48 lbf)
	Closing Operating Force	5.9 N (1.32 lbf)	100 N (22.48 lbf)
<b>9.3.2.1</b>	<b>Air Infiltration per ASTM E283-12</b>		
	<b>Specimen #1</b>	<b>PASS</b>	
	75 Pa (1.57 psf)	0.93 L/s/m <sup>2</sup> 0.183 cfm/ft <sup>2</sup>	1.52 L/s/m <sup>2</sup> 0.300 cfm/ft <sup>2</sup>
<b>11.2.2</b>	<b>Canadian Air Infiltration per ASTM E283-12</b>		
	<b>Specimen #1</b>	<b>PASS</b>	
	75 Pa (1.57 psf)	<b>Level A2</b>	<b>Level A2</b>
	Infiltration	0.93 L/s/m <sup>2</sup> 0.183 cfm/ft <sup>2</sup>	1.52 L/s/m <sup>2</sup> 0.30 cfm/ft <sup>2</sup>
	Exfiltration	0.88 L/s/m <sup>2</sup> 0.174 cfm/ft <sup>2</sup>	1.52 L/s/m <sup>2</sup> 0.30 cfm/ft <sup>2</sup>
	Average	0.91 L/s/m <sup>2</sup> 0.179 cfm/ft <sup>2</sup>	



**9.3.3 Water Penetration per ASTM E547-09**

Water applied at a rate of approximately 5.5 gallons per hour per square foot  
 Temperature: 60.8 °F (16 °C)

<b>Specimen #1</b>	<b>PASS</b>	
220 Pa (4.59 psf)	No Entry	No Entry

**9.3.4.2 Uniform Load Deflection per ASTM E330-10**

Temperature: 60.8 °F (16 °C)  
 2-mil plastic film was used to prevent air leakage during testing. It is the opinion of the test engineer that this film did not influence the results of the test

<b>Specimen #1</b>	
Positive Load:	1200 Pa (25.1 psf)
Negative Load:	1200 Pa (25.1 psf)

Interlocking Stile		
Span (L):	2032 mm (80 in)	Reported
Positive Deflection:	39.1 mm (1.54 in)	NA
Negative Deflection:	42.4 mm (1.67 in)	NA

**9.3.4.2 Uniform Load Structural per ASTM E330-10**

Temperature: 60.8 °F (16 °C)  
 2-mil plastic film was used to prevent air leakage during testing. It is the opinion of the test engineer that this film did not influence the results of the test

<b>Specimen #1</b>	
Positive Load:	1800 Pa (37.6 psf)
Negative Load:	1800 Pa (37.6 psf)

Interlocking Stile	<b>PASS</b>	
Span (L):	2032 mm (80 in)	.4%*L
Positive Permanent Set:	2.3 mm (0.09 in)	8.1 mm (0.32 in)
Negative Permanent Set:	2.0 mm (0.08 in)	8.1 mm (0.32 in)



**9.3.2.1 Forced Entry Per ASTM F842-14**

**Specimen #1** **PASS**

Grade: 10 Assembly Type: A

T1 = 5 min, L1 = 1334 N (300 lbf), L2 = 778 N (175 lbf)

L3 = 133 N (30 lbf), L4 = 222 N (50 lbf) + Panel wt

Disassembly Test	No Entry	No Entry
Concentrated Load Tests	No Entry/Damage	No Entry/Damage
Lock/Hardware Manipulation	No Entry	No Entry
Sash Manipulation	No Entry	No Entry

**9.3.6.3 Deglazing Test**

**Specimen #1** **PASS**

Type: Horizontal Sliding

Horizontal Member Load 230 N (51.7 lbf)

Vertical Member Load 320 N (71.9 lbf)

Horizontal Glazing Bite 12.7 mm (0.50 in)

Vertical Glazing Bite 12.7 mm (0.50 in) 90%\*Bite

Top Rail Deflection	0.0 mm (0.00 in)	11.4 mm (0.45 in)
Bottom Rail Deflection	0.0 mm (0.00 in)	11.4 mm (0.45 in)
Left Stile Deflection	0.0 mm (0.00 in)	11.4 mm (0.45 in)
Right Stile Deflection	0.0 mm (0.00 in)	11.4 mm (0.45 in)



**Drawing Reference:** The test specimen drawings have been reviewed by Quast Consulting and Testing, Inc. and are representative of the test specimen reported herein.

**List of Official Observers:**

Name:

Brian Sasman  
Arlen Fisher  
Alex Carlson  
Nick Bauman

Company:

Quast Consulting and Testing, Inc.  
Quast Consulting and Testing, Inc.  
Merrill Millwork  
Merrill Millwork

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Quast Consulting and Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such material shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. No conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimens tested. This report may not be reproduced, except in full, without the written approval of Quast Consulting and Testing, Inc.

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QUAST CONSULTING & TESTING, INC.

Arlen Fisher  
Test Engineer

Brian Sasman, PE  
Reviewer

Attachments (pages): This report is complete only when all attachments listed are included.

As-built drawings (5 Pages)





### Revisions

<u>Revision #</u>	<u>Date</u>	<u>Description</u>
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