

TEST REPORT

Report No.: C2278.01-301-44

Rendered to:

International Window
Fullerton, California

PRODUCT TYPE: Polyvinyl Chloride (PVC) XO Horizontal Sliding Window
SERIES/MODEL: 5420

SPECIFICATIONS: AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights.*

CAWM 301-90, *Forced Entry Resistance Test for Windows.*

Title	Summary of Results	
	Test Specimen #1	Test Specimen #2
Primary Product Designator	HS-C35 1815 x 1813 (71 x 71)	HS-C40 1812 x 1503 (71 x 59)
Design Pressure	±1680 Pa (±35.09 psf)	±1920 Pa (±40.08 psf)
Air Infiltration	1.07 L/s/m ² (0.21 cfm/ft ²)	
Water Penetration Resistance Test Pressure	290 Pa (6.06 psf)	

Test Completion Date: 03/18/2013

Reference must be made to Report No. C2278.01-301-44, dated 03/24/13 for complete test specimen description and detailed test results.

1.0 Report Issued To: International Window
1551 E. Orangethrope Ave.
Fullerton, California 92831

2.0 Test Laboratory: Architectural Testing, Inc.
2524 East Jensen Avenue
Fresno, California 93706
(559) 233 - 8705

3.0 Project Summary:

3.1 Product Type: Polyvinyl Chloride (PVC) XO Horizontal Sliding Window

3.2 Series/Model: 5420

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods. The specimens tested successfully met the performance requirements for the following ratings: Test Specimen #1: **HS-C35 1815 x 1813 (71 x 71)**; Test Specimen #2: **HS-C40 1812 x 1503 (71 x 59)**.

3.4 Test Dates: 09/07/2012 – 03/18/2013

3.5 Test Record Retention End Date: All test records for this report will be retained until March 24, 2017.

3.6 Test Location: Architectural Testing, Inc. test facility in Fresno, California.

3.7 Test Sample Source: The test specimen was provided by the client. Representative samples of the test specimen will be retained by Architectural Testing for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
David Douglass	Architectural Testing, Inc.
Jarod Hardman	Architectural Testing, Inc.
Jeffrey Osugi	Architectural Testing, Inc.
Jay Ratliff	Architectural Testing, Inc.

4.0 Test Specifications:

AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights.*

CAWM 301-90, *Forced Entry Resistance Test for Windows.*

5.0 Test Specimen Description:

5.1 Product Sizes:

Test Specimen #1:

Overall Area: 3.29 m ² (35.42 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1815	71-7/16	1813	71-3/8
Interior panel	906	35-11/16	1756	69-1/8
Screen	870	34-1/4	1766	69-1/2

Test Specimen #2:

Overall Area: 2.72 m ² (29.31 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1812	71-5/16	1503	59-3/16
Interior panel	902	35-1/2	1451	57-1/8
Screen	867	34-1/8	1459	57-7/16

The following descriptions apply to all specimens unless noted.

5.0 Test Specimen Description: (Continued)

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill and jambs	PVC	
Exterior meeting stile	PVC	
Roller track	PVC	Snap fit to sill and held back 1/4" from each end.
Siteline adapter	PVC	Snap fit to head and sill at fixed lite. Secured to the frame with #6 x 1/2" Phillips pan head screws 2" from each end and mid-span.

	Joinery Type	Detail
Head, sill and jambs	Mitered	Fully welded.
Exterior meeting stile	Coped	Secured through the frame with two #8 x 3" Phillips flat head screws. The screws were sealed.

5.3 Panel Construction:

Panel Member	Material	Description
Top rail, bottom rail and each stile	PVC	The interlock was held back 1" from each end and 2-1/4" for the lock.

	Joinery Type	Detail
All corners	Mitered	Fully welded.

5.4 Weatherstripping:

Description	Quantity	Location
0.310" high polypile with center fin	1 Row	All members of panel.
0.450" high polypile with center fin	1 Row	Exterior meeting stile.

5.0 Test Specimen Description: (Continued)

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
3/4" IG	U shaped coated steel	1/8" Annealed	1/8" Annealed	Exterior glazed onto a 3/8" wide x 1/16" high glazing tape and secured with a snap in PVC glazing bead.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed lite	1	829 x 1671	32-5/8 x 65-13/16	3/8 - 1/2
Interior panel	1	824 x 1678	32-7/16 x 66-1/16	3/8 - 1/2

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weephole with cover	1-3/4" x 1/4" (1-1/4" x 1/8" effective)	4	3-5/8" and 29-1/4" from each end through exterior sill face.
Weephole	1/4" round	8	2-1/8" and 32-3/8" from each end through sill screen track. 1" from each end through sill siteline adapter. 1-1/4" from each end through bottom rail.
Weephole	1/2" round	4	5" and 30-5/8" from each end through sill track and internal webbing.
Weepnotch	1" x 1/8"	4	Through sill track at each sill track weephole.

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Auto lock	1	Midspan on interior meeting stile. The faceplate was secured to the lock with two #6 x 1/2" Phillips flat head screws.
Keeper	1	Opposite lock on exterior meeting stile secured with two #8 x 1" Phillips flat head self-drilling screws into reinforcement.
Plastic roller with housing	2	3-1/4" from each end on bottom rail.
Secondary lock	1	Bottom of interior meeting stile secured with two 8-32 x 5/8" Phillips pan head screws into reinforcement.
Secondary lock keeper	1	33-1/2" from lock jamb secured through roller track and sill with two #6 x 1/2" Phillips pan head screws.

5.8 Reinforcement:

Drawing Number	Location	Material
50600	Exterior meeting stile	Extruded aluminum
50601	Interior meeting stile	Extruded aluminum
50596	8" long at sill of frame at exterior meeting stile	Extruded aluminum

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Roll formed aluminum	Square cut with corner key	Fiberglass	Hollow spline

6.0 Installation:

The specimen was installed into a Spruce-Pine-Fir wood buck. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the window was sealed with silicone. The frame perimeter was blocked with 2 x 2 wood.

Location	Anchor Description	Anchor Location
Head, sill and jambs	3" drywall screws	4" from each and 16" on center through the 2 x 2 wood and mounting fin.

7.0 Test Results: The temperature during testing was 19 - 25°C (66 - 77°F). The results are tabulated as follows:

Test Specimen #1:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 64 N (14.5 lbf) Maintain motion: 44 N (10.0 lbf) Locks: 22 N (5.0 lbf)	Report Only. 115 N (25.9 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	1.07 L/s/m ² (0.21 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547 at 220 Pa (4.59 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at exterior meeting stile +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	12.5 mm (0.49") 11.9 mm (0.47")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at exterior meeting stile +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	0.0 mm (0.00") 0.0 mm (0.00")	5.3 mm (0.21") max.	4, 5
Forced Entry Resistance, per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
Forced Entry Resistance, per CAWM 301, Type: I	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Deglazing, per ASTM E 987 Operating direction, 320 N (71.9 lbf) Remaining direction, 230 N (51.7 lbf)	Pass Pass	Meets as stated Meets as stated	

7.0 Test Results: (Continued)

Test Specimen #1: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 290 Pa (6.06 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 taken at exterior meeting stile +1800 Pa (+37.59 psf) -1800 Pa (-37.59 psf)	15.5 mm (0.61") 15.3 mm (0.60")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at exterior meeting stile +2520 Pa (+52.63 psf) -2520 Pa (-52.63 psf)	0.3 mm (0.01") 0.3 mm (0.01")	5.3 mm (0.21") max.	4, 5

Test Specimen #2:

Uniform Load Deflection, per ASTM E 330 taken at exterior meeting stile +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	8.9 mm (0.35") 8.0 mm (0.32")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 taken at exterior meeting stile +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	0.3 mm (0.01") 0.0 mm (0.00")	4.4 mm (0.17") max.	4, 5

7.0 Test Results: (Continued)

Note 1: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.

Note 2: With and without insect screen.

Note 3: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

Note 4: Loads were held for 10 seconds.

Note 5: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

Architectural Testing will service this report for the entire test record retention period. Test records that are retained such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation will be retained by Architectural Testing, Inc. for the entire test record retention period.

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 specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.

David Douglass
Project Manager

Leaton Kirk
Director – Regional Operations

JO: ms

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (14) Complete drawings packet on file with Architectural Testing, Inc.

Appendix A

Alteration Addendum

- Alteration #1:** Date – 10/09/12
Cause for alteration – Failed air penetration resistance test.
Remedial action taken – Replaced weatherstripping. Added bulb gasket.
- Alteration #2:** Date – 10/09/12
Cause for alteration - Failed water penetration resistance test.
Remedial action taken – Added drainage.
- Alteration #3:** Date – 02/21/13
Cause for alteration – Client request.
Remedial action taken – Replaced Test Specimen #1.
- Alteration #4:** Date – 02/20/13
Cause for alteration - Client request.
Remedial action taken - Replaced Test Specimen #2.



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Record Retention End Date: 03/24/17

Appendix B

Drawings

***Note:** Complete drawings packet on file with Architectural Testing, Inc.*