



**TEST REPORT**

**Report No.:** F5752.01-801-44

**Rendered to:**

RAM INDUSTRIES INC.  
Houston, Texas

**PRODUCT TYPE:** Aluminum Fixed Window  
**SERIES/MODEL:** S800 Heavy Picture Window

**SPECIFICATION:** AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS-2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

<b>Title</b>	<b>Summary of Results</b>
Primary Product Designator	Class CW – PG70 1524 x 1829 (60 x 72) – Type FW
Design Pressure	±3360 Pa (±70.18 psf)
Air Infiltration	<.10 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )
Water Penetration Resistance Test Pressure	580 Pa (12.11 psf)

**Test Completion Date:** 03/23/2016

Reference must be made to Intertek-ATI Report No. F5752.01-801-44, dated 04/06/16 for complete test specimen description and detailed test results.

**1.0 Report Issued To:** Ram Industries, Inc.  
8600 Commerce Park Dr.  
Houston, Texas 77036

**2.0 Test Laboratory:** Architectural Testing, Inc.,  
an Intertek company ("Intertek-ATI")  
1909 10th Street, Suite 100  
Plano, Texas 75074  
(469) 814-0687

**3.0 Project Summary:**

**3.1 Product Type:** Aluminum Fixed Window

**3.2 Series/Model:** S800 Heavy Picture Window

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test method(s). The specimen tested successfully met the performance requirements for a Class CW – PG70 1524 x 1829 (60 x 72) – Type FW.

**3.4 Test Date:** 03/23/2016

**3.5 Test Location:** Intertek-ATI test facility in Plano, Texas. Calibration of test equipment was performed by Intertek-ATI in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

**3.6 Test Sample Source:** The test specimen was provided by the client. Representative samples of the test specimen(s) will be retained by Intertek-ATI for a minimum of four years from the test completion date.

**3.7 Drawing Reference:** The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix A. Any deviations are documented herein or on the drawings.

**3.8 List of Official Observers:**

<u>Name</u>	<u>Company</u>
Jim Wendt	Ram Industries Inc.
Jeffrey Crump	Intertek-ATI

**4.0 Test Specification(s):**

*AAMA/WDMA/CSA 101/LS.2/A440-11, NAFS-2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

**5.0 Test Specimen Description:**

**5.1 Product Sizes:**

Overall Area: 2.8 m <sup>2</sup> (30 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1524	60	1829	72
Fixed Daylight Opening	1448	57	1749	68-7/8

**5.2 Frame Construction:**

Frame Member	Material	Description
Head, sill and jambs	Aluminum	Extruded aluminum thermally broken with polyurethane break at frame head, sill and jambs.

	Joinery Type	Detail
All corners	Mechanical	Frame corners are attached with two (2) #8 x 1" HX WSHR Type A SMA, each. Aluminum frame corner bracket (2" x .062" thick) located at frame interior pocket. All corners sealed.

**5.0 Test Specimen Description:** (Continued)

**5.3 Weather-stripping:** Weather-strip was not utilized

**5.4 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
1" IG	Aluminum	3/16" annealed	3/16" annealed	Exterior glazed with Schnee Morehead 5555 at the interior face of glass and aluminum glazing bead with rubber stop at the exterior face of glass.

**5.5 Drainage:**

Drainage Method	Size	Quantity	Location
Weep slot	3/8" x 1/8"	2	Each end of sill glazing bead.

**5.6 Hardware:** Hardware was not utilized.

**5.7 Reinforcement:** No reinforcement was utilized.

**5.8 Screen Construction:** Screen was not utilized.

**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 sealant.

Location	Anchor Description	Anchor Location
Interior perimeter of frame nail fin	Nail fin specimen installed in a (2" x 6") yellow pine wood test buck with #6 x 1-1/4" hex head screws which is attached to outer (2" x 10") yellow pine wood wrap. Interior of nail fin is supported by (2" x 4") yellow pine which is not attached.	Hex head screws attached 2" from each frame end and 12" on center at frame head, sill and jambs.

**7.0 Test Results:** The temperature during testing was 23°C (73°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
<b>Air Leakage,</b> Infiltration per ASTM E 283 at 75 Pa (1.6 psf)	<.10 L/s/m <sup>2</sup> (<0.01 cfm/ft <sup>2</sup> )	.15 L/s/m <sup>2</sup> (0.30 cfm/ft <sup>2</sup> ) max.	1
<b>Water Penetration,</b> per ASTM E 547 at 220 Pa (4.59 psf)	N/A	N/A	3
<b>Uniform Load Deflection,</b> per ASTM E 330 +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	N/A	N/A	3
<b>Uniform Load Structural,</b> per ASTM E 330 +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	N/A	N/A	3
<b>Forced Entry Resistance,</b> per ASTM F 588, Type: D - Grade: 10	Pass	No entry	

Optional Performance			
<b>Water Penetration,</b> per ASTM E 547 at 580 Pa (12.11 psf)	Pass	No leakage	2
<b>Uniform Load Deflection,</b> per ASTM E 330 +3360 Pa (+70.18 psf) -3360 Pa (-70.18 psf)	.8 mm (0.03") 1 mm (0.04")	1.8 mm (0.07") max. 1.8 mm (0.07") max.	4,5
<b>Uniform Load Structural,</b> per ASTM E 330 +5040 Pa (+105.26 psf) -5040 Pa (-105.26 psf)	<.10 mm (<0.01") <.10 mm (<0.01")	1 mm (0.04) max. 1 mm (0.04") max.	4,5



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

*Note 2: With and without insect screen.*

*Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.*

*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.*

Intertek-ATI 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 Intertek-ATI 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 Intertek-ATI.

For INTERTEK-ATI,



Digitally Signed by: Jeffrey Crump

Jeffrey Crump  
Sr. Project Manager



Digitally Signed by: Andy Cost

Andy Cost  
Laboratory Manager

JC:cm

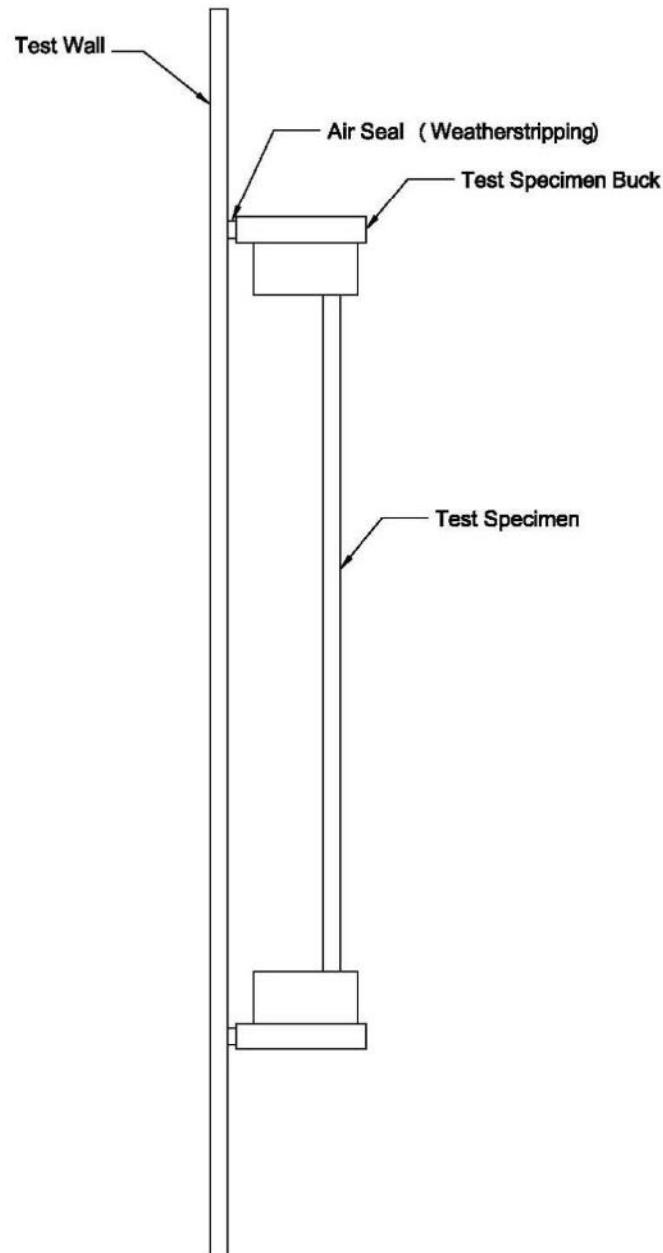
Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Location of air seal (1)

Appendix-B: Drawings (4) Complete drawings packet on file with Intertek-ATI

## Appendix A

**Location of Air Seal:** The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weather-stripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weather-stripping and creating a seal.



## **Appendix B**

### **Drawings**

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