

**TEST REPORT**

**Report No.:** B3408.01-801-47

**Rendered to:**

CROFT, LLC.  
Magnolia, Mississippi

**PRODUCT TYPE:** Aluminum Single Hung Window  
**SERIES/MODEL:** 93/98

**SPECIFICATION:** AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

<b>Summary of Results</b>	
<b>Test Specimen #1</b>	
<b>Title</b>	
Primary Product Designator	Class R – PG15 1016 x 1600 (40 x 63)
Design Pressure	±720 Pa (±15.04 psf)
Air Infiltration	0.2 L/s/m <sup>2</sup> (0.04 cfm/ft <sup>2</sup> )
Water Penetration Resistance Test Pressure	140 Pa (2.92 psf)

<b>Summary of Results</b>	
<b>Test Specimen #2</b>	
<b>Title</b>	
Primary Product Designator	Class R – PG30 1219 x 1829 (48 x 72) – H
Design Pressure	±1440 Pa (±30.08 psf)
Water Penetration Resistance Test Pressure	220 Pa (4.59 psf)

**Test Completion Date:** 11/03/11

Reference must be made to Report No. B3408.01-801-47, dated 11/07/11 for complete test specimen description and detailed test results.

**1.0 Report Issued To:** Croft, LLC.  
1080 Highway 51  
Magnolia, Mississippi 39652

**2.0 Test Laboratory:** Architectural Testing, Inc.  
2865 Market Loop  
Southlake, Texas 76092  
(817) 410-7202

**3.0 Project Summary:**

**3.1 Product Type:** Aluminum Single Hung Window

**3.2 Series/Model:** 93/98

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test method(s). The specimens tested successfully met the performance requirements for the following ratings: Test Specimen #1: Class R - PG15 1016 x 1600 (40 x 63) rating; and Test Specimen #2: Class R - PG30 1219 x 1829 (48 x 72) - H rating.

**3.4 Test Dates:** 09/26/2011 - 11/03/2011

**3.5 Test Location:** Croft, LLC. test facility in Magnolia, Mississippi. Calibration of test equipment was performed by Architectural Testing 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 will be retained by Architectural Testing for a minimum of four years from the test completion date.

**3.7 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.

**3.8 List of Official Observers:**

<u>Name</u>	<u>Company</u>
Jim Bitz	Croft, LLC.
Paul Osbey	Croft, LLC.
Tony Brown	Architectural Testing, Inc.

**4.0 Test Specification(s):**

AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

## 5.0 Test Specimen Description:

### 5.1 Product Sizes:

#### Test Specimen #1:

Overall Area: 1.6 m <sup>2</sup> (17.5 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1016	40	1600	63
Interior sash	987	38-7/8	810	31-7/8
Screen	940	37	803	31-5/8

#### Test Specimen #2:

Overall Area: 2.2 m <sup>2</sup> (24.0 ft <sup>2</sup> )	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1219	48	1829	72
Interior sash	1181	46-1/2	756	29-3/4
Screen	1146	45-1/8	746	29-3/8

### 5.2 Glazing:

Glass Type	Glazing	Glazing Method
Monolithic	3/16" annealed	Interior glazed against a backbedding material to the exterior & a vinyl snap-in glazing bead to the interior

#### Test Specimen #1

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed lite	1	930 x 730	36-5/8 x 28-3/4	0.25"
Sash	1	930 x 730	36-5/8 x 28-3/4	0.25"

#### Test Specimen #2:

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Fixed lite	1	1146 x 746	45-1/8 x 29-3/8	0.25"
Sash	1	1133 x 683	44-5/8 x 26-7/8	0.25"

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

*The following descriptions apply to all specimens.*

**5.3 Frame Construction:**

Frame Member	Material	Description
Head, sill & jambs	Aluminum	Custom extruded
Fixed rail	Aluminum	Custom extruded

	Joinery Type	Detail
All corners	Coped & butted	Sealed & secured with two #8 x 1/2" screws
Fixed rail	Coped & butted	Sealed & secured with a #8 x 1/2" screw at ends

**5.4 Sash Construction:**

Sash Member	Material	Description
Rails & stiles	Aluminum	Custom extruded

	Joinery Type	Detail
All corners	Coped & butted	Sealed & secured with a #8 x 1/2" screw

**5.5 Weatherstripping:**

Description	Quantity	Location
Vinyl bulb seal	1 row	Sill face bottom rail
0.187 x 0.250 woolpile	1 row	Interior face fixed rail
0.187 x 0.250 woolpile	1 row	Jamb face stiles
0.187 x 0.290 woolpile	1 row	Exterior face stiles

**5.6 Drainage:** A sloped sill was utilized.

## 5.0 Test Specimen Description: (Continued)

### 5.7 Hardware:

Description	Quantity	Location
Spiral balance	2	Inserted into jamb pockets
Tilt latch	2	Top face top rail ends
Pivot bars	2	Jamb face stiles bottom end
Cam lock	2	8" o.c. from top rail top face ends

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

### 5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Attachment Method
Roll formed aluminum	Plastic corner key	Flexible vinyl 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 of the window was sealed under the nailing fin. A 1 x 2 wood stop was sealed & secured over the nailing fin full perimeter.

Location	Anchor Description	Anchor Location
Nailing fin	#8 x 1-1/4" screw	4" from corners, 12" o.c. thereafter
Head & sill wood stops	#8 x 1-1/2" screw	2" from ends
Jamb wood stops	#8 x 1-1/2" screw	2" from ends and center

**7.0 Test Results:** The temperature during testing was 29°C (85°F). The results are tabulated as follows:

**Test Specimen #1:**

Title of Test	Results	Allowed	Note
<b>Operating Force,</b> per ASTM E 2068	Initiate motion: 125 N (28lbf) Maintain motion: 111 N (25 bf) Locks: 80N (18 lbf)	Report Only  155 N (35 lbf) max.  100 N (22.5 lbf) max.	
<b>Air Leakage,</b> Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.2 L/s/m <sup>2</sup> (0.04 cfm/ft <sup>2</sup> )	1.5 L/s/m <sup>2</sup> (0.3 cfm/ft <sup>2</sup> ) max.	1
<b>Water Penetration,</b> per ASTM E 547 at 220Pa (4.59 psf)	Pass	No leakage	2
<b>Uniform Load Deflection,</b> per ASTM E 330, taken at meeting rail +720 Pa (+15.04 psf) -720 Pa (-15.04 psf)	3 mm (0.10") 2 mm (0.08")	Report Only Report Only	3, 4, 5
<b>Uniform Load Structural,</b> per ASTM E 330, taken at meeting rail +1080 Pa (+22.56 psf) -1080 Pa (-22.56 psf)	<1 mm (<0.01") <1 mm (<0.01")	4 mm (0.14") max. 4 mm (0.14") max.	4, 5
<b>Forced Entry Resistance,</b> per ASTM F 588, Type: A - Grade: 10	Pass	No entry	
<b>Deglazing,</b> per ASTM E 987 Operating direction, 320 N (70 lbf) Remaining direction, 230 N (50 lbf)	Pass  Pass	Meets as stated  Meets as stated	

**7.0 Test Results:** (Continued)

**Test Specimen #2:**

Title of Test	Results	Allowed	Note
<b>Optional Performance</b>			
<b>Water Penetration,</b> per ASTM E 547 at 220Pa (4.59 psf)	Pass	No leakage	2
<b>Uniform Load Deflection,</b> per ASTM E 330 taken at meeting rail +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	9 mm (0.34") 11 mm (0.43")	Report Only Report Only	3, 4, 5
<b>Uniform Load Structural,</b> per ASTM E 330 taken at meeting rail +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	1 mm (0.03") <1 mm (0.01")	5 mm (0.18") max. 5 mm (0.18") 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 deflections reported are not limited by AAMA/WDMA/CSA 101/1.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.*

The service life of this report will expire on the stated Test Record Retention End Date, at which time such materials as drawings, data sheets, samples of test specimens, copies of this report, and any other pertinent project documentation, shall be discarded without notice.

If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) 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 specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, Inc.



Digitally Signed by: Anthony D. Brown

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Tony Brown  
Technician



Digitally Signed by: Andy Cost

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Andy Cost  
Laboratory Manager

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (15)