



TEST REPORT

Report No.: D8838.01-109-44

Rendered to:

REHAU CONSTRUCTION LLC
Leesburg, Virginia

PRODUCT TYPE: Horizontal Sliding Window
SERIES/MODEL: 190

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

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

Title	Summary of Results
AAMA/WDMA/CSA 101/I.S.2/A440-08 and -11	Class LC-PG35 1797 x 1397 (71 x 55)-HS
Design Pressure	+1680 Pa (+35.09 psf)
Negative Design Pressure	-1920 Pa (-40.10 psf)
Air Infiltration	0.3 L/s/m ² (0.05 cfm/ft ²)
Canadian Air Infiltration/Exfiltration Level	A3
Water Penetration Resistance Test Pressure	260 Pa (5.43 psf)

Test Completion Date: 06/24/14

Reference must be made to Report No. D8838.01-109-44, dated 08/14/14 for complete test specimen description and detailed test results.

1.0 Report Issued To: REHAU Construction LLC
1501 Edwards Ferry Road
Leesburg, Virginia 20176

2.0 Test Laboratory: Architectural Testing, Inc.
130 Derry Court
York, Pennsylvania 17406-8405
717-764-7700

3.0 Project Summary:

3.1 Product Type: Horizontal Sliding Window

3.2 Series/Model: 190

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 LC-PG35 1797 x 1397 (71 x 55)-HS** rating.

3.4 Test Dates: 06/23/14 - 06/24/14

3.5 Test Record Retention End Date: All test records for this report will be retained until June 24, 2018.

3.6 Test Location: Architectural Testing, Inc. test facility in York, Pennsylvania.

3.7 Test Specimen Source: The test specimen(s) was provided by the client. Representative samples of the test specimen(s) 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(s) reported herein. Test specimen construction was verified by Architectural Testing per the drawings located in Appendix D and on file with Architectural Testing. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Jim Reed	REHAU Construction LLC
Stephen R. Fowler	Architectural Testing, Inc.
Michael D. Stremmel, P.E.	Architectural Testing, Inc.
Eric M. Brennan	Architectural Testing, Inc.

4.0 Test Specification(s):

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

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

CSA A440S1-09, Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 2.5 m ² (27.0 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall size	1797	70-3/4	1397	55
Sash size	883	34-3/4	1334	52-1/2
Screen	854	33-5/8	1353	53-1/4

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, and jambs	PVC	Extruded. The interior sill track utilized a snap-in PVC roller track.
Fixed meeting stile	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded
Fixed meeting stile	Coped and butted	Secured with two #8 x 1-1/2" long Tek screws through the head/sill into the fixed meeting stile.

5.3 Sash Construction:

Sash Member	Material	Description
Rails and stiles	PVC	Extruded

	Joinery Type	Detail
All corners	Mitered	Thermally welded

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
0.187" backed by 0.270" high polypile with fin	1 Row	Sash perimeter

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	Aluminum	5/32" tempered	5/32" tempered	The glass was set from the exterior against an adhesive backed glazing tape and secured with snap-on vinyl glazing beads.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Sash daylight opening	1	797 x 1249	31-3/8 x 49-3/16	1/2"
Fixed daylight opening	1	830 x 1318	32-11/16 x 51-7/8	1/2"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weepslot with cover	1" long by 1/4" wide	2	Sill, under the roller track, 3" from the ends, draining into the interior hollow below
Weepslot	1/2" long by 1/8" high	2	Interior hollow ends draining through the intermediate hollow and into the exterior hollow
Weephole	3/16" diameter	2	Sill screen track 5" from the ends, draining into the exterior hollow below
Weepslot with cover	1-1/2" wide by 1/4" high	3	Sill face, 3" from the ends and midspan draining the exterior hollow

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Cam locks with adjacent metal keepers	2	Interior meeting stile, 6-1/2" from the ends with adjacent keepers on the fixed meeting stile
Tandem rollers	2	Sash bottom rail, 3" from the ends

5.8 Reinforcement:

Drawing Number	Location	Material
TDS_399006	Stiles	Aluminum
TDS_500125	Fixed meeting stile	Aluminum
TDS_399001	Rails	Aluminum

5.9 Screen Construction:

Frame Material	Corner Construction	Mesh Type	Mesh Attachment Method
Extruded aluminum	Square-cut and secured with a PVC corner key	Fiberglass	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 perimeter of the window was sealed with sealant.

Location	Anchor Description	Anchor Location
Head, sill, and jambs	#10 x 5/8" long pan head screws	Located 3" from the corners and spaced 4-1/2" on center through the nailing fin and into the wood buck

7.0 Test Results: The temperature during testing was 27°C (81°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 53 N (12 lbf) Maintain motion: 35 N (8 lbf) Locks: 17 N (4 lbf)	90 N (20 lbf) max. 45 N (10 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.3 L/s/m ² (0.05 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Air Leakage, Exfiltration per ASTM E 283 at 75 Pa (1.57 psf)	<0.1 L/s/m ² (<0.01 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Canadian Air Infiltration/Exfiltration Level	A3	N/A	
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588 Type: A - Grade: 10	Pass	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Insect Screen Serviceability 13.5 lbs (60 N)	Pass	N/A	
Deglazing, 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)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 260 Pa (5.43 psf)	Pass	No leakage	2
Uniform Load Deflection, per ASTM E 330 Deflections taken at meeting stile +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	28.2 mm (1.11") 27.2 mm (1.07")	Report Only	4, 5, 6
Uniform Load Structural, per ASTM E 330 Permanent sets taken at meeting stile +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	2.0 mm (0.08") 2.3 mm (0.09")	5.6 mm (0.22") max. 5.6 mm (0.22") max.	5, 6

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

Note 4: 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 5: Loads were held for 10 seconds.

Note 6: 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 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.

Eric M. Brennan
Project Manager

Michael D. Stremmel, P.E.
Senior Project Engineer

EMB:asm

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

Appendix-A: Alteration Addendum (1)

Appendix-B: Location of Air Seal (1)

Appendix-C: Photograph(s) (1)

Appendix-D: Drawing(s) (2) Complete drawings packet on file with Architectural Testing, Inc.

Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
1	08/14/14	Summary page, Page 2	Added specification AAMA/WDMA/CSA 101/I.S.2/A440-11

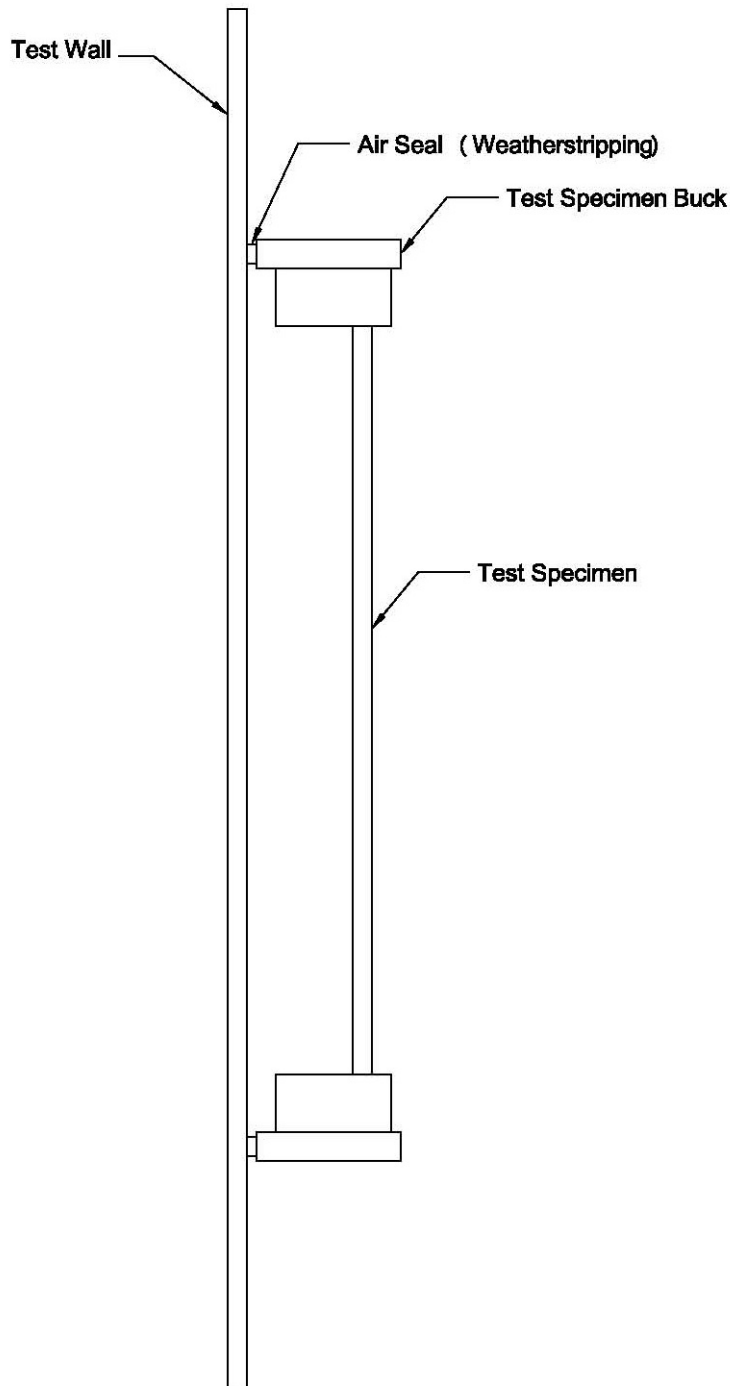
Appendix A

Alteration Addendum

Note: *No alterations were required.*

Appendix B

Location of Air Seal: The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping 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 weatherstripping and creating a seal.



Appendix C
Photograph(s)



Photo No. 1
190 Single Slider

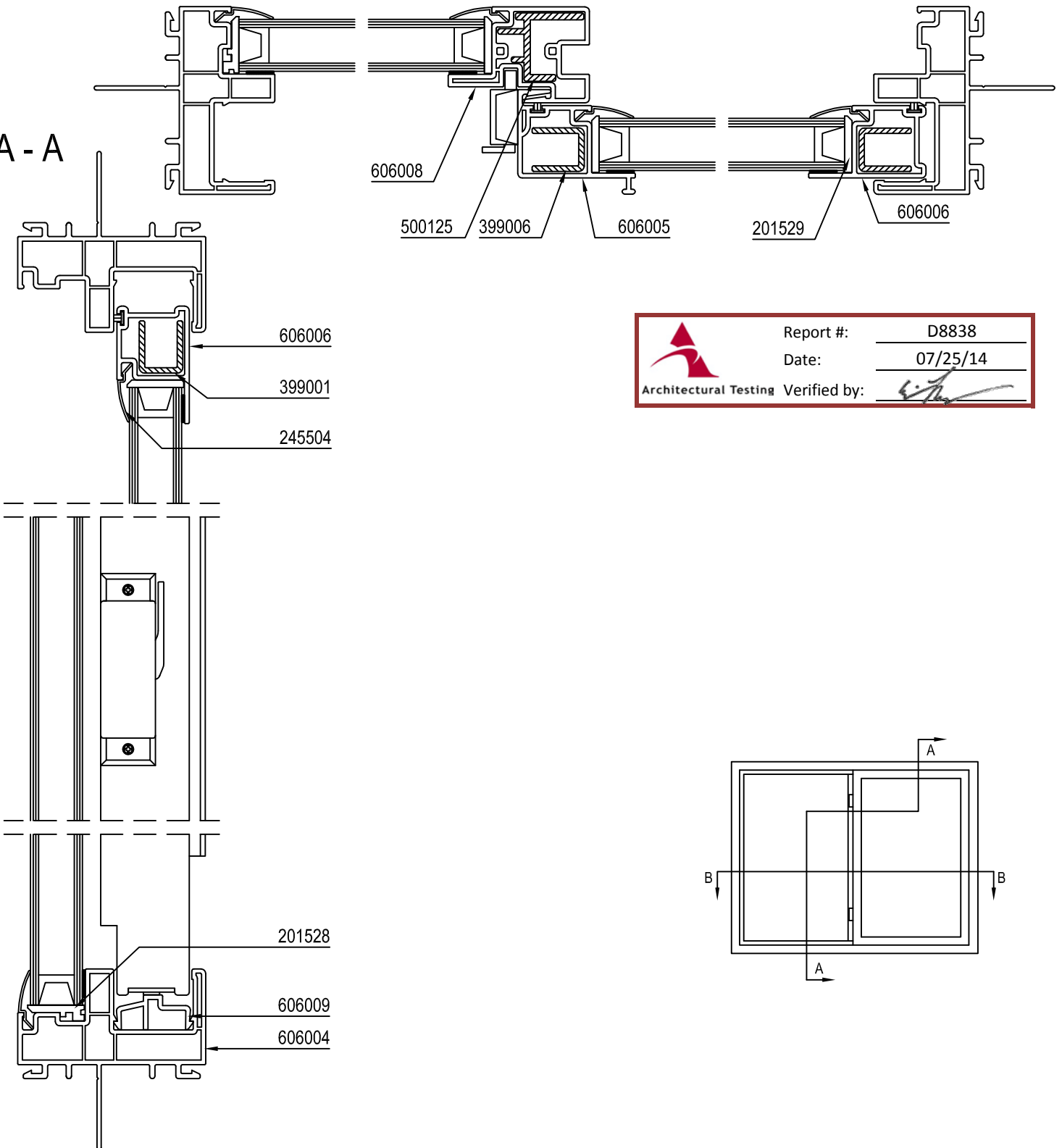
Appendix D

Drawing(s)

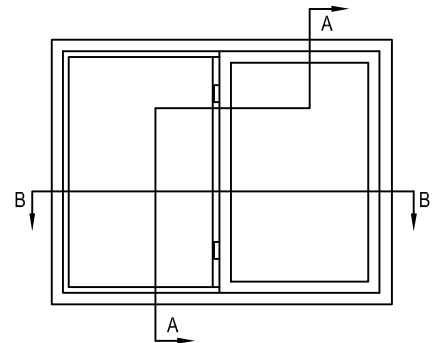
Note: Complete drawings packet on file with Architectural Testing, Inc.

B - B

A - A



 Architectural Testing	Report #:	D8838
	Date:	07/25/14
	Verified by:	



			System: 190			
			Title: Single Slider Window			
		REHAU Construction LLC 1501 Edwards Ferry Road, NE Leesburg, Virginia 20176 Tel: (703) 777-5255	Date: 02/07/2014	Scale: 1:2	Drawn by: JWB	
-	-			Drawing No.: 2412-14-021	Rev.:	
Rev #	Revision Description & Date			© 2014 REHAU. Do not disclose without written permission		

BILL OF MATERIALS

**REHAU®**

Unlimited Polymer Solutions



Architectural Testing

Report #: D8838Date: 07/25/14Verified by: Product: 190 - Single Slider Window

Article / Part No.	Description
201528	Fixed Lite Setting Block
201529	Standard Setting Block
245504	Standard Glazing Stop
399001	Jamb Sash Reinforcement
399006	Interlock Sash / Sill Sash Reinforcement
500125	Fixed Meeting Rail Reinforcement
606009	Slider Track
606004	Single Hung / Single Slider Frame
606005	Interlock Sash
606006	Sill Sash
606007	Jamb Sash
606008	SS / SH Transom
Notes: Quantity estimate based on rough estimate	