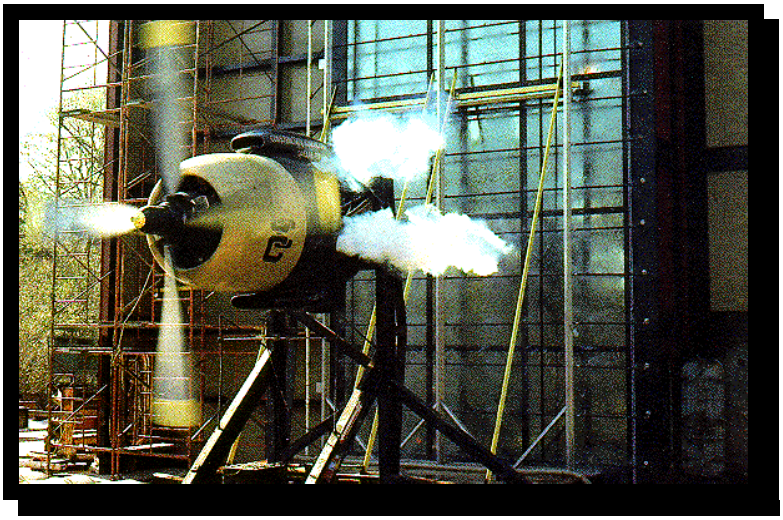
CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*



TEST REPORT:

AAMA 501-05 PERFORMANCE REPORT
UNITED STATES ALUMINUM
SERIES FF 451 STOREFRONT SYSTEM
REPORT CCLI #10-002

January 11, 2010

Prepared for:

UNITED STATES ALUMINUM
200 Singleton Drive
Waxahachie, TX 75165

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APPENDIX:

Refer to mock-up drawing in **Appendix A**. This report is not complete unless this drawing is stamped and initialed by **CCLI** as illustrated below.

Detail	Detail	Date	Stamped as Illustrated
U.S. Aluminum	Elevation	12/7/09	
U.S. Aluminum BOM			
U.S. Aluminum	USA-3124	12/7/09	
U.S. Aluminum	USA-3114	12/7/09	
U.S. Aluminum	USA-3124	12/7/09	
U.S. Aluminum	USA-3124	12/7/09	
U.S. Aluminum	USA-3124	12/7/09	

AAMA 501-05 PERFORMANCE REPORT
UNITED STATES ALUMINUM
SERIES FF 451 STOREFRONT SYSTEM
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1. PROJECT DATA

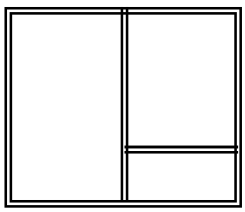
Project:	AAMA 501-05 Performance Testing United States Aluminum Series FF 451 Storefront System
Date of Testing:	December 23, 2010
Test Performed At:	US Aluminum testing facility in Waxahachie, TX.
Tested For:	United States Aluminum 200 Singleton Drive Waxahachie, TX 75165
Witnessed By:	(All or Partial Viewing)
Terry Hopgood	United States Aluminum
Jeffrey Crump	Construction Consulting Laboratory, *International*

2. SUMMARY

The United States Aluminum Series FF 451 Storefront System was tested in accordance with AAMA 501-05 and passed the short form requirements noted in laboratory test specifications section for Air Infiltration @ 6.24 Psf, Water Penetration @ 8.00 Psf, Uniform Load Deflection @ 30 Psf with a positive measured deflection of .320" and a negative measured deflection of .315", with an allowable of .551". Uniform Load Structural Test was performed @ 45 Psf positive and negative with no glass breakage or unallowable permanent deformation.

3. TEST SPECIMEN

Product Type: Aluminum Storefront, **Product Drawings, Appendix A**
Series Model: FF 451 Storefront System
Publication No.: AAMA 501-05
Frame Size: 7'-11$^{3}/_{16}$" x 8'-$^{9}/_{16}$"
Configuration:



Weather-Stripping: None.

Hardware: None.

Glass: Sealed Insulated Glass: 2 pcs ¼" tempered, ½" air spacer, and 1" overall thickness.

Glazing: Exterior glazed using glazing gasket (part #NP225) at interior and exterior of glass with horizontal glazing stops (part #M 573) at frame horizontal members.

Weep Arrangement: 1¼" x $^{3}/_{16}$" weep slot located at frame sill flashing (FT-400), 2½" from each vertical member, two under each lite (total of 4)..

Sealant: Frame is interior and exterior perimeter sealed with backer rod and Tremco silicone. Glazing gasket ends (part #NP225) buttered with silicone. Continuous seal located at interior and exterior of frame sill (part #FT583) and sill flashing (part #FT400). Water deflectors completely sealed (at head only) and sealed at interior on horizontal mullion. End dams embedded in silicone.

Reinforcement: None.

Installation Features: Test specimen was installed in a #2 (2" x 8") yellow pine wood test buck with #12 x 3" flat head wood screws , two (2), screws spaced 3" apart were located approximately 7" from each vertical mull. Frame sub-sill attached with ¼" dia. wood screws 6" from each end and 12" on center.

Other Features: Frame member's thermally broken using polyurethane. Horizontal and vertical members attached using two (2) #10 x 1" HH-SMS per connection.

4. PERFORMANCE RESULTS

Title of Test	Test Method	Measured	Allowed
Air Infiltration @ 6.24 Psf	ASTM E 283-04	0.039 CFM/Ft²	0.06 CFM/Ft²
Water Resistance @ 8.00 Psf	ASTM E 331-00	No Leakage	No Leakage
Uniform Load Deflection @ Vertical Mullion	ASTM E 330-02		
-Positive @ 30 Psf		0.320"	0.551"
-Negative @ 30 Psf		0.315"	0.551"
Uniform Load Structural	ASTM E 330-02		
-Positive @ 45 Psf		No Damage	No Damage
-Negative @ 45 Psf		No Damage	No Damage
-Permanent Set		0.0625"	0.193"

Detailed extrusion and assembly drawings indicating measured wall thickness and corner construction are on file and were compared to the test sample submitted. These records will be retained at **CCLI** for a period of four years.

5. DISCLAIMER

The test specimen was tested in accordance with the short form requirements of AAMA 501-05. The results were obtained by using the designated test methods.

Respectfully submitted,

CONSTRUCTION CONSULTING LABORATORY, *INTERNATIONAL*

WESLEY A. WILSON
LABORATORY MANAGER

JEFFREY CRUMP
TESTING MANAGER

APPENDIX

APPENDIX A

PROJECT DRAWINGS

DRAWINGS	**DETAIL #**	**DATE**
US Aluminum	Elevation	11/10/09
US Aluminum Bill of Materials		
US Aluminum		11/10/09
US Aluminum		11/11/09
US Aluminum		11/10/09
US Aluminum		11/10/09
US Aluminum		11/10/09
US Aluminum		11/10/09
US Aluminum		11/10/09

- END OF REPORT -