PROJECT NUMBER:180-6154

DATE: 9/5/00

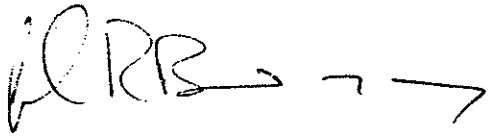
STORK® TWIN CITY TESTING
723 S. 72nd AVE STE B
Wausau, WI 54401

LABORATORY TESTING OF MONUMENT VINYL PREMIUM SLIDING WINDOW MANUFACTURED BY HURD MILLWORK COMPANY

Prepared for:
HURD MILLWORK COMPANY
Attn: Mr. Art Kuss
520 South Whelen Street
Medford, WI 54451

Client Purchase Order Number: Verbal

Prepared By:



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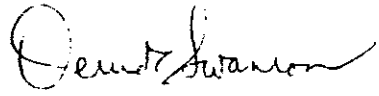

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The test results contained in this report pertain only to the specimens tested and not necessarily to all similar products.

LABORATORY TESTING OF 8-0 X 5-0 VPSLW WINDOW

INTRODUCTION:

This report presents the results of laboratory testing conducted on a Vinyl Premium Sliding window manufactured by Hurd Millwork Company. This work was requested and authorized by Mr. Art Kuss of Hurd Millwork with testing conducted on February 18, 2000.

The purpose of the testing was to determine the performance of the window for air infiltration, water resistance, and structural integrity when tested in accordance with ASTM procedures included in ANSI/AAMA/WDMA 101/I.S.2-97 "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors".

TEST RESULTS SUMMARY:

The window described herein meets performance specifications for ANSI/AAMA/WDMA 101/I.S.2-97 **HS-LC25(X,O,X)**. This unit also met the requirement of 4.5 psf for water penetration test.

Design Pressure Rating: For use in locations adhering to the S.B.C.C.I., S.F.B.C., S.F.B.C. Broward Edition, and where the pressure requirements as determined by ASCE 7 minimum design loads for buildings and other structures does not exceed design pressure ratings listed above.

SAMPLE DESCRIPTION:

Overall Size:	95-1/2" wide by 59-1/2" high
Operating Sash Size (2)	20-13/16" wide by 57-3/8" high
Stationary Sash Size	58" wide by 53-3/4" high
Unit Area:	39.46 ft^2
Finish:	White vinyl

SAMPLE DESCRIPTION (CON'T):

Glazing: The operating sash utilized nominal 3/4" insulating glass fabricated from two nominal 3/32" annealed sheets. The fixed lite utilized nominal 3/4" insulating glass fabricated from two nominal 1/8" annealed sheets. All glass was set from the exterior against foam glazing tape, with the corners sealed with silicone and vinyl glazing beads were used on the exterior.

Weatherstripping:

Description	Quantity	Location
0.250" high pile with center fin by 0.187" backing	1 row	Both sash exterior perimeter
0.250" high pile with center fin by 0.187" backing	1 row	Fixed sash meeting stiles
1/4" Backer Foam	1 row	Head and sill at fixed meeting rail

Frame Construction: Frame corners were miter cut and welded. A fixed meeting stiles were secured to the frame head and sill at each end with two screws, and also contained aluminum for reinforcement.

Sash Construction: The sash corners were miter cut and welded.

Hardware:

Description	Quantity	Location
Double stainless rollers	4	Sash bottom rails, 2" from each end (two per sash)
Metal sweep lock	4	Sash lock stile, 6" from each end and engage to kerf in fixed stile (two per sash)
PVC anti-liftout brackets	4	Head track, 2" and 16" from each jamb

Drainage:

Description	Quantity	Location
3/8" by 1/4" weep hole	2	Sill exterior and inner cavity leg, 1 1/2" from each end
5/8" by 1/4" weep hole	2	Sill to hollow below, 3" from each jamb
3/8" by 1/4" weep hole	2	Fixed lite 3" from end of sash

Screen Construction: The screen Frame was roll-formed aluminum with plastic corner Keys. Fiberglass screen cloth was attached to the frame with a rubber spline.

Installation: The test specimen was installed within a 1 1/2" by 6" wood buck. The window frame was secured to the wood buck by utilizing the vinyl nailing fin with 2" galvanized roofing nails spaced 4" on center and sealed with a quality silicone sealant.

TEST RESULTS:

	ACTUAL	PERFORMANCE REQUIREMENTS
Air Infiltration		
Chamber Pressure, psf	+1.57	+1.57
Unit Area, ft^2	39.39	
Air Infiltration, cfm	2.625	
cfm/ft^2	0.06	0.30 maximum
Static Water Penetration		
With Screens		
Chamber Pressure, psf	4.5	3.75
Water Flow Rate, $gal/hr/ft^2$	5.00	5.00 minimum
Pressurized Duration, min.	5.0	5.0
Unpressurized Duration, min.	1.0	1.0
Cycles	4	4
Water Penetration	NONE	No water shall flow over the interior face.
Without Screens		
Chamber Pressure, psf	4.5	3.75
Water Flow Rate, $gal/hr/ft^2$	5.00	5.00 minimum
Pressurized Duration, min.	5.0	5.0
Unpressurized Duration, min.	1.0	1.0
Cycles	4	4
Water Penetration	NONE	No water shall flow over the interior face.
Structural Load Test		
Chamber Pressure, psf	+45.00	+37.5
Duration, sec.	10.00	10.00
Permanent Set, in.	Negligible	<0.4%L = 0.382 maximum
Chamber Pressure, psf	-37.5	-37.5
Duration, sec.	10.00	10.00
Permanent Set, in.	Negligible	<0.4%L = 0.382 maximum
Operating Force		
Opening	12lbs	30lbs
Closing	9lbs	30lbs

TEST RESULTS (CON'T):

Forced Entry Resistance (ASTM F588-97, performance grade 10)

Test	Load (lbs)	Duration (min)	Performance
Lock Manipulation	---	5	Satisfactory (PASS)
A1	75	5	Satisfactory (PASS)
A2	150, 75	5	Satisfactory (PASS)
A3	150, 75	5	Satisfactory (PASS)
A4	150, 75	5	Satisfactory (PASS)
A5	150, 75	5	Satisfactory (PASS)
A7	150, 75, 25	5	Satisfactory (PASS)
Lock Manipulation	---	5	Satisfactory (PASS)

Deglazing	ACTUAL	PERFORMANCE REQUIREMENTS
Deglazing bite @ 70 lbs	0.06"	0.50"
Deglazing bite @ 50 lbs	0.04"	0.50"

Corner Weld Test		
Break corners of test unit	Pass	Breakage not to extend along entire weld line

TEST PROCEDURE:

The tests were conducted in accordance with ASTM and ANSI/AMMA/WDMA 101/I.S.2-97 test procedures and the results were compared to the performance requirements.

Air Infiltration

ASTM:E283-91, Standard Test Methods for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors. Testing was conducted at 1.57psf test chamber static pressure.

Water Penetration

ASTM:E547-96, Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Difference. Testing was conducted at 4.5 psf, test chamber static pressure while water was applied continuously to the entire window at a rate greater than or equal to 5 gal/hr/sq ft for four cycles consisting of 5 minutes pressurized and 1 minute unpressurized with and without screens.

Physical Load Testing

ASTM:E330-96, Standard Test Methods for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Differences. Permanent set measurements were recorded at positive 45.00psf and negative 37.5 psf test chamber pressure.

Forced Entry Resistance

ASTM: F588-97, Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact. Performed in accordance with Type A (Single Hung) windows.

Deglazing

ASTM: E987-88, Standard Test Methods for Deglazing Force of Fenestration Products

Corner Weld Test

ANSI/AAMA/WDMA 101/I.S.2.97, Section 2.1,7 and APPENDIX A

REMARKS:

The tested window remained in the custody of the manufacturer after testing was completed. Twin City Testing will retain detailed drawings and a copy of this report. The above results were obtained by using the designated test methods and they indicate compliance with the performance requirements of the above referenced guidelines. Certification of this product may only be granted by a certification administrator.