PROJECT NUMBER: 180-6278

DATE: 8/28/01

STORK® TWIN CITY TESTING
723 South 72nd Ave. STE B
Wausau, WI 54401

LABORATORY TESTING OF CCT HALF ROUND 8 x 4 MANUFACTURED BY HURD MILLWORK COMPANY

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

Test Date: 08/28/2001

Expiration Date: 08/28/2005
DP60 Rating: Air .01cfm/ft2
Water 12.00 psf
Structural 90.00 psf

Prepared By:

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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 x 4 CCT HALF ROUND

INTRODUCTION:

This report presents the results of laboratory testing conducted on an CCT Half Round window manufactured by Hurd Millwork Company. This work was requested and authorized by Mr. Art Kuss of Hurd Millwork Company with testing conducted on August 28, 2001.

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 **F- R 60 8x4 .** Also met the optional requirement of 12 psf for Water penetration and 6.24 psf for Air Infiltration.

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:	96-1/4" wide by 48" high
Unit Area:	25.13 sqft
Finish:	Aluminum Clad exterior, unfinished wood interior

Glazing: The window utilized nominal 1" insulated glass comprised of two nominal 3/16" annealed glass. The glass was set on ½" glazing tape against the cladding on the exterior and wood stop's on the interior. Silicone was applied at the glazing tape corners. The wood stops were stapled with 1" crown staples 8"-10" on center.

Frame Construction: Wood framing members consisted of laminated veneer on the radius jamb and finger joint pine on the sill. The jamb and sill were square cut and secured with three # 8 by 2" screws per side. The exterior aluminum cladding was corner keyed sealed with silicone and secured with 1 # 6 by 1-1/2" screw per corner. The metal was stapled to the wood frame with ½" crown staples 8"-10" on center. Aluminum drip cap was applied to the frame, snap fit and secured with one screw per side.

Installation: The test unit was installed into a 2 x 6 wood buck. The interior side of the aluminum drip cap was sealed to the wood buck with silcone sealant and secured with 2" galvanized roofing nails spaced 4"-6" on center.

TEST RESULTS:

Paragraph		ACTUAL	PERFORMANCE REQUIREMENTS
2.1.2	**Air Infiltration**		
	Chamber Pressure, psf	1.57	1.57
	Unit Area, ft^2	25.13	
	Air Infiltration, cfm	.1	
	cfm/ft^2	.01	0.30 maximum
	Chamber Pressure, psf	6.24	1.57
	Unit Area, ft^2	25.13	
	Air Infiltration, cfm	.1	
	cfm/ft^2	.01	---
2.1.3	**Cyclic Water Penetration**		
	Chamber Pressure, psf	12.00	9.00
	Water Flow Rate, $gal/hr/ft^2$	5.00	5.00
	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.
2.1.4.2	**Structural Load Test**		
	Chamber Pressure, psf	+50.00	---
	Duration, sec.	60.00	---
	Deflection, in.	0.045	---
	Chamber Pressure, psf	-50.00	---
	Duration, sec.	60.00	---
	Deflection, in.	0.098	---
	Chamber Pressure, psf	+90.00	+90.00
	Duration, sec.	10.00	10.00
	Permanent Set, in.	.000	< .4% = .384
	Chamber Pressure, psf	-90.00	-90.00
	Duration, sec.	10.00	10.00
	Permanent Set, in.	0.015	< .4% = .384

TEST RESULTS (continued):

2.1.8 Forced Entry Resistance

Test	Load (lbf)	Duration (min)	Performance
Hand and Tool Manipulation	---	5.00	No Entry

TEST PROCEDURE:

The tests were conducted in accordance with ASTM and 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 1.57 psf (25 mph) and optional 6.24 psf (50 mph) test chamber static pressure.

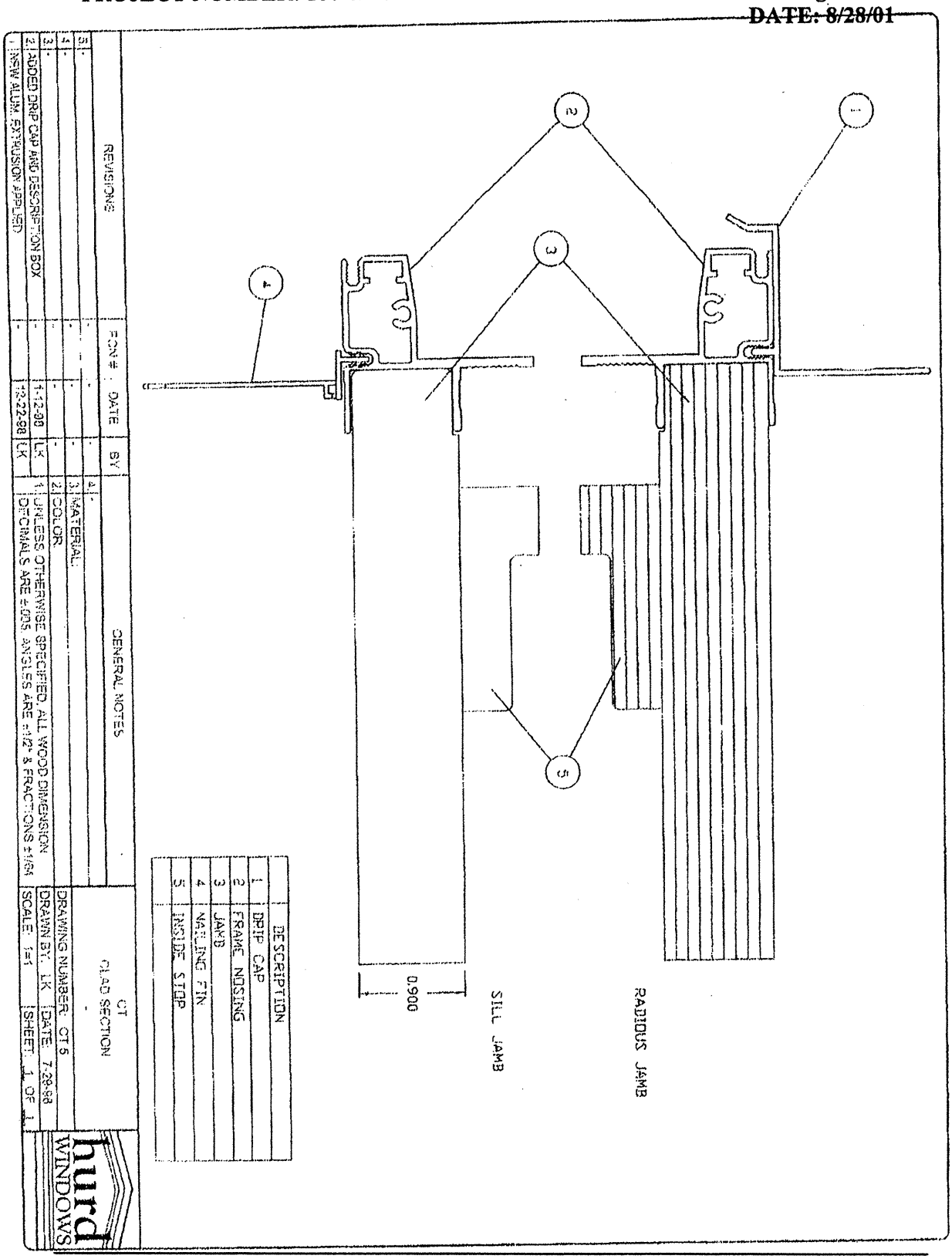
Water Penetration
ASTM:E547-96, *Standard Test Methods for Water Penetration of Exterior Windows, Curtain Wall and Doors by Cyclic Static Air Pressure Difference.* Testing was conducted at 12.00 psf test chamber static pressure while water was applied continuously to the entire window at the rate of 5 gal/hr/sq ft for four cycles consisting of 5 minutes pressurized and one minute unpressurized.

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 90.00 psf (189.9 mph) positive and negative test chamber pressure.

Forced Entry Resistance
ASTM:F588-97, *"Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact".* Tests were conducted in accordance with Grade 10 for Type D windows

REMARKS:
Twin City Testing will retain 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. This is not for certification

~~**DATE: 8/28/01**~~



	DESCRIPTION
1	DRIP CAP
2	FRAME NOSING
3	JAMB
4	NAILING FIN
5	INSIDE STOP

	REVISIONS	ECN #	DATE	BY
5	-	-	-	-
4	-	-	-	-
3	-	-	-	-
2	ADDED DRIP CAP AND DESCRIPTION BOX	-	1-12-00	LK
1	NEW ALUM. EXTRUSION APPLIED	-	12-22-98	LK

GENERAL NOTES

1. UNLESS OTHERWISE SPECIFIED ALL WOOD DIMENSION DECIMALS ARE ±.005, ANGLES ARE ±1/2° & FRACTIONS ±1/64
2. COLOR -
3. MATERIAL -
4. -

CT
CLAD SECTION
-

DRAWING NUMBER CT 5
DRAWN BY LK DATE 7-28-98
SCALE 1=1 SHEET 1 OF 1

hurd WINDOWS