Architectural Testing

AAMA/WDMA/CSA
TEST REPORT

Rendered to:

United States Aluminum

PRODUCT TYPE: Casement
SERIES/MODEL: 7400

Title	Summary of Results
Primary Product Designator	C-C70 1091 x 1581 (43 x 62)
Design Pressure*	3360 Pa (70.18 psf)
Negative Design Pressure*	3360 Pa (70.18 psf)
Operating Force (in motion)	22 N (5 lbf)
Air Infiltration	0.10 L/s/m^2 (0.02 cfm/ft^2)
Water Penetration Resistance Test Pressure*	580 Pa (12.11 psf)
Uniform Load Structural Test Pressure	±5040 Pa (105.26 psf)
Forced Entry Resistance	Grade 10

*-Optional Secondary Designators **Test Completion Date**: 10/20/06

Reference must be made to Report No. 68583.01-801-47 for complete test specimen description and data.

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Architectural Testing

AAMA/WDMA/CSA TEST REPORT

Rendered to:

UNITED STATES ALUMINUM
200 Singleton Drive
Waxahachie, TX 75165

Report No.:	68583.01-801-47
Test Date:	10/20/06
Report Date:	10/31/06
Revision 1:	12/14/06
Expiration Date:	10/20/10

Project Summary: Architectural Testing, Inc. (ATI) was contracted by United Stats Aluminum to witness testing on a Series/Model 7400, casement window at United Stats Aluminum test facility in Waxahachie, TX. The sample tested successfully met the performance requirements for a C-C70 1091 x 1581 (43 x 62) rating. Test specimen description and results are reported herein.

Test Specification: The test specimen was evaluated in accordance with:

AAMA/WDMA/CSA 101/I.S.2/A440-05, *Standard/Specification for Windows, Doors, and Unit Skylights*

Test Specimen Description:

Series/Model: 7400

Product Type: Casement

Overall Size: 1091 mm (42-15/16") wide by 1581 mm (62-1/4") high

Rough Opening Size: 1104 mm (43-7/16") wide by 1594 mm (62-3/4") high

Vent Size: 1041 mm (41") wide by 1527 mm (60-1/8") high

Overall Area: 1.7242 m^2 (18.56 ft^2)

Glazing Type: Sealed insulating glass with two pieces of 1/4" annealed glass and a 1/2" aluminum spacer. 1" overall thickness. Glass size: (40") wide by (59") high. Bite was (1/2").

Note: This glazing exceeds thickness requirements as specified in ASTM E 1300-03.

Reinforcement: None

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Test Specimen Description: (Continued)

Finish: Painted aluminum

Frame Construction: Frame members were thermally broken with an isobar. Frame corners were coped, butted, secured with two #8 x 1" screws, and sealed full perimeter with seam sealer. Screw heads were sealed with seam sealer. Hinges were sealed full perimeter to the jambs with seam sealer. Limit device fasteners were sealed with seam sealer.

Frame Component Parts List:

Description	Quantity	Part#	Manufacturer
Head/Sill interior	1	WN 402	US Aluminum
Head/Sill exterior	1	WN 401	US Aluminum
Jamb interior	2	WN 404	US Aluminum
Jamb exterior	2	WN 403	US Aluminum
Polyamide thermobar	4	TB 146	Ensinger

Sash Construction: Sash corners were mitered and crimped to an aluminum corner key.

Sash Component Parts List:

Description	Quantity	Part#	Manufacturer
Stile/Rail interior	4	WN 406	US Aluminum
Stile/Rail exterior	4	WN 405	US Aluminum
Corner angle	4	CC 304	US Aluminum
Glazing bead	4	WN 429	US Aluminum
Polyamide thermobar	4	TB 146	Ensinger
Wedge gasket	4	WH 344	Tremco
Glazing Tape	20'	GT187	Tremco

Weatherstripping:

Description	Quantity	Location	Joinery	Retaining method	Part#	Manufacturer
1/4" tall two finger vinyl leaf	1 row	Exterior leg of vent full perimeter	Kerf	Staked	NP402	Central Plastic
1/4" diameter foam filled vinyl bulb	1 row	Interior leg of frame full perimeter	Kerf	Staked	WH342	Amesbury

Glazing Details: The sash was interior glazed with butyl tape at the exterior and a snap-in glazing bead and wedge gasket at the interior. The corners of the glazing tape were sealed with silicone.

Test Specimen Description: (Continued)

Drainage:

Description	Quantity	Location
10" cut back	2	Exterior vinyl leaf weatherstrip at each end.

Hardware:

Description	Quantity	Location	Retaining method	Part#	Manufacturer
3 bar limit device	2	Head and sill at 10" from the lock jamb	Two #10 x 1/2" screws	WH701	Truth
Cam lock	2	9" and 52" from the bottom of the lock stile	Two #10 x 1/2" screws	WH038	Bronze Craft
Lock keeper	2	9" and 52" from the bottom of the lock jamb	Two #10 x 5/16" screws	WH039	Bronze Craft
Hinge	2	6" on center from each end of the hinge jamb.	Four #10 x 1/2" screws and four #12 x 5/8" screws	WH701	USAC/AMC
Riser block	1	Sill at 16-3/4" from the lock jamb.	One #10 x 3/4" screw	WH472	Truth

Installation: The unit was sealed into a 2x10 test buck and secured full perimeter through the frame using one #12 x 3" screw four inches from each corner and 12" o.c. thereafter. Screw heads in the sill were sealed with seam sealer.

Test Results: The results are tabulated as follows:

Paragraph	Title of Test - Test Method	Results	Allowed
5.3.1	Operating Force per ASTM E 2068		
	Initiate motion	22 N (5 lbf)	Report
	Maintain motion	22 N (5 lbf)	135 N (30 lbf)
	Latches	22 N (5 lbf)	135 N (30 lbf)
5.3.2.1	Air Leakage Resistance per ASTM E 283		
	300 Pa (6.24 psf)	0.10 L/s/m^2 (0.02 cfm/ft^2)	1.5 L/s/m^2 (0.30 cfm/ft^2) max.

***Note #1**: The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-05 for air leakage resistance.*

5.3.3	Water Penetration Resistance per ASTM E 547 (See Note #2)
5.3.4.2	Uniform Load Deflection per ASTM E 330 (See Note #2)
5.3.4.3	Uniform Load Structural per ASTM E 330 (See Note #2)

Test Results: (Continued)

Paragraph	Title of Test - Test Method	Results	Allowed

Note #2: *The client opted to start at a pressure higher than the minimum required. Those results are listed under "Optional Performance".*

5.3.5	Forced Entry Resistance per ASTM F 588		
	Type: B	Grade: 10	
	Disassembly Test	No entry	No entry
	Test B1	No entry	No entry
	Test B2	No entry	No entry
	Test B3	No entry	No entry
	Lock Hardware Manipulation Test	No entry	No entry
	Sash/Panel Manipulation Test	No entry	No entry
5.3.6.4.3	Sash Vertical Deflection Test		
	270 N (60 lbf)	1 mm (0.04")	21 mm (0.82") max.
5.3.6.6.2	Distributed Load Test		
	300 Pa (6.2 psf)	No damage	No damage

Optional Performance

4.4.2.6	Water Penetration Resistance per ASTM E 547 (without insect screen)		
	580 Pa (12.11 psf)	No leakage	No leakage

		Indicator Location				
4.4.2.6	Uniform Load Deflection per ASTM E 330	End	Center	End	Net	Allowed
	(Deflections were taken on the hinge stile between the hinges)					
	(Loads were held for 10 seconds)					
	3360 Pa (70.18 psf) (positive)	2 mm (0.09")	3 mm (0.12")	2 mm (0.08")	1 mm (0.03")	See Note #3
	3360 Pa (70.18 psf) (negative)	4 mm (0.16")	5 mm (0.18")	2 mm (0.09")	2 mm (0.06")	See Note #3

Note #3*: The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440-05 for this product designation. The deflection data is recorded in this report for special code compliance and information only.*

Test Results: (continued)

Paragraph	Title of Test - Test Method	Results				
		Indicator Location				
4.4.2.6	Uniform Load Structural per ASTM E 330	End	Center	End	Net	Allowed
	(Permanent sets were taken on the hinge stile between the hinges)					
	(Loads were held for 10 seconds)					
	5040 Pa (105.26 psf) (positive)	<1 mm (0.02")	1 mm (0.03")	<1 mm (0.02")	<1 mm (0.01")	3 mm (0.13")
	5040 Pa (105.26 psf) (negative)	<1 mm (0.02")	1 mm (0.03")	<1 mm (0.01")	<1 mm (0.01")	3 mm (0.13")

Drawing Reference: The test specimen drawings have been reviewed by ATI and match the test specimen reported herein.

Detailed drawings, representative samples of the test specimen, and a copy of this report will be retained by ATI for a period of four years from the original test date. The above results were secured by using the designated test methods and they indicate compliance with the performance requirements of the above referenced specification. This report does not constitute certification of this product, which may only be granted by the certification program administrator. This report may not be reproduced, except in full, without the approval of Architectural Testing, Inc.

For ARCHITECTURAL TESTING, INC.

Digitally Signed by: Andy Cost
Andy Cost
Laboratory Manager

Digitally Signed by: John H. Waskow
John Waskow
Director of Regional Operations

AC:al
Attachments (pages):
Appendix-A: Alteration Addendum (1)
Appendix B: Drawings (19)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	11/20/06	N/A	Original report issue
1	12/14/06	2	Under Frame Construction: Changed "Stay bar fasteners were sealed with seam sealer." to "Limit Device fasteners were sealed with seam sealer." Under Sash Component Parts List: Added Glazing Tape
		3	Under Hardware: Changed "3 bar stay arm" to "3 bar limit device"

Appendix A:

Alteration Addendum

No alterations were required.

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Test sample complies with these details.
Deviations are noted.

Report# 68593

Date 11/20/06 Tech

BILL OF MATERIALS

	ITEM	I.E.C. PART NO	PART NO	DESCRIPTION	QTY.	SUPPLIER	PART NO	COMMENTS	UNITS
FRAME	1	60942	WH401	FRAME HEAD/SILL EXTERIOR HALF	2	IN TEX-TX			PCS.
	2	60917	WH402	FRAME HEAD/SILL INTERIOR HALF	2	IN TEX-TX			PCS.
	3	60918	WH403	FRAME JAMB EXTERIOR HALF	2	IN TEX-TX			PCS.
	4	60919	WH404	FRAME JAMB INTERIOR HALF	2	IN TEX-TX			PCS.
	5	USA-2441	TB140	POLYAMIDE THERMOBAR	6	ENSINGER			PCS.
	6	7400-008	WH472	RISER BLOCK	1	TRUTH			PCS.
SASH	7	60920	WH405	SASH RAIL/STILE EXTERIOR HALF	4	IN TEX-TX			PCS.
	8	60921	WH406	SASH RAIL/STILE INTERIOR HALF	4	IN TEX-TX			PCS.
	9	60955	QC304	CORNER ANGLE FOR SASH	4	IN TEX-TX			PCS.
	10	60939	WH429	1" GLASS STOP	4	IN TEX-TX			PCS.
FASTENERS	11		N / A	#12 x 3" FLAT HEAD WOOD SCREW	20	----		@ PERIMETER	PCS.
	12			#10 x ¾" FLAT HEAD SHEET METAL SCREW	1			@ RISER BLOCK	
	13			#12 x ⅝" FLAT HEAD SHEET METAL SCREWS	8			@ HINGE	
	14		ST242	#10 X ½" FLAT HEAD SHEET METAL SCREWS	8			@ HINGE	
	15			#10 x ⅜" FLAT HEAD SHEET METAL SCREWS	4			@ LOCK KEEPER	
	16		ST242	#10 x ½" FLAT HEAD SHEET METAL SCREWS	4			@ CAM LOCK	
	17		ST242	#10 x ½" FLAT HEAD SHEET METAL SCREWS	4			@ LIMIT DEVICE	
GLAZING	18			1" GLASS (¼" CT x ½" AIR x ¼" CT)	15.39	----		40" X 54"	SQ. FT.
	19	USA-1823	ST157	GLAZING TAPE (½" x ⅝")	A/R	----			FT.
	20			1-PART SILICONE BACK BEAD @ ST157	16	----		2" X/Y EA CORNER	BL.
	21	7400-069	SP222	SETTING BLOCK (.250 x 1" x 4")	2	EPO			PCS.
	22	7400-070	WB416	EDGE BLOCK (.224 x 1" x 8")	3	EPO			PCS.
VINYLS AND GASKETS	23	USA-1820	WH342	BULB GASKET	A/R	AMESBURY			FT.
	24	7400-020	WP402	EXTERIOR SEAL GASKET	A/R				FT.
	25	USA-1819	WH344	WEDGE GASKET	A/R	TREMCO			
HARDWARE	26		WH761	7400 BUTT HINGES	2	AMC			
	27		WH701	7400 LIMIT DEVICE	2	TRUTH			
	28		WH036	CUSTODIAL HANDLE	2	BRONZE CRAFT			
	28		WH039	KEEPER	2	BRONZE CRAFT			

MOCK-UP / JOB NAME

Castro Glass

United States ALUMINUM COMMERCIAL PRODUCTS GROUP

NAME JSM

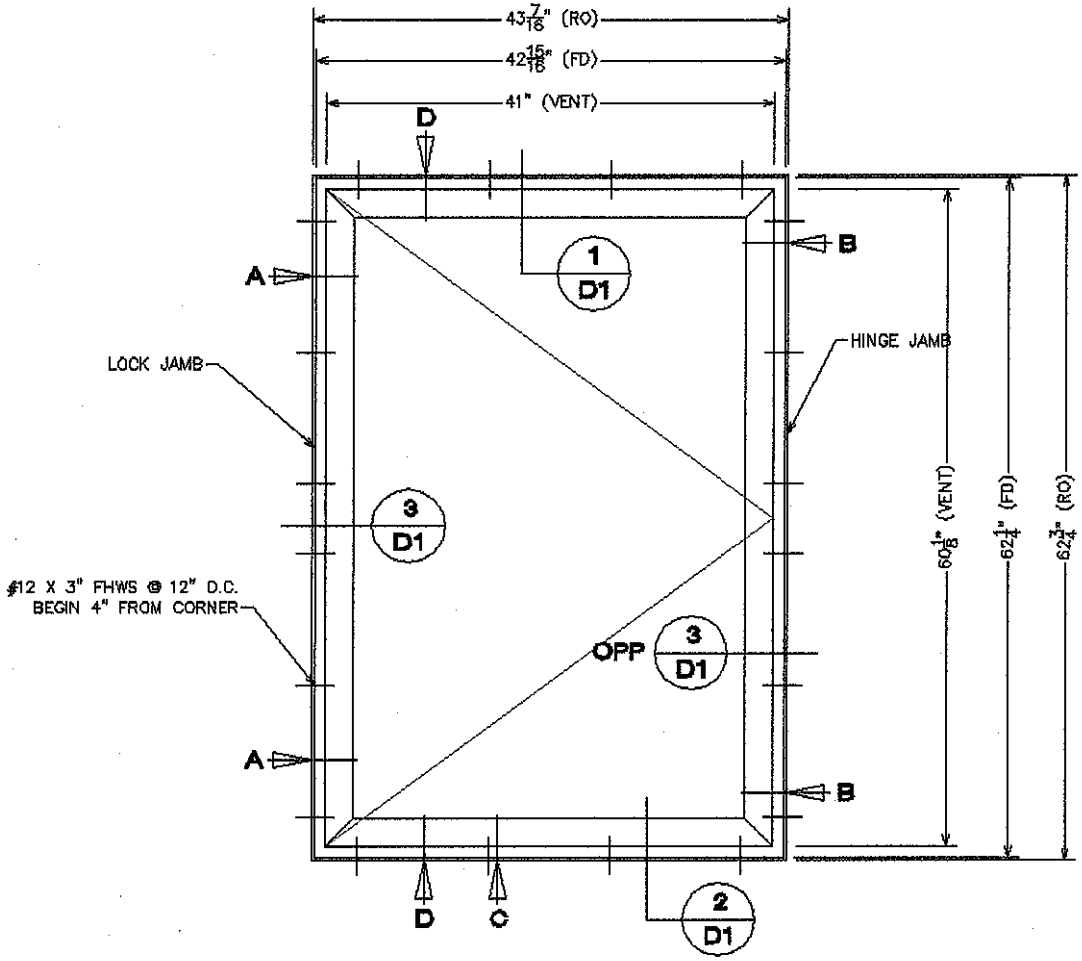
DATE 11-6-2006

SCALE FULL (AROH O)

DESCRIPTION

7400 CASEMENT WINDOW
1" GLAZING

PAGE D2



WINDOW ELEVATION
SHOWN 2X SCALE

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Test sample complies with these details.
Deviations are noted.

Report# 68583

Date 11/20/06 Tech

KEY TO ABBREVIATIONS:

FD - FRAME DIMENSION
DLO - DAYLIGHT OPENING
RO - ROUGH OPENING
A - LOCK LOCATION 9" FROM BOTTOM AND TOP ENDS OF LOCK JAMB
B - HINGE LOCATION 6" FROM BOTTOM AND TOP ENDS OF HINGE JAMB
C - RISER BLOCK LOCATION 16¾" FROM LOCK JAMB
D - LIMIT DEVICE LOCATION HEAD/SILL 10" FROM LOCK JAMB

PAGE INDEX:

MOCK-UP / JOB NAME	Castro Glass
NAME	JSM
DATE	11-6-2006
SCALE	¾" = 1' (ARCH C)
DESCRIPTION	7400 CASEMENT WINDOW 1" GLAZING

United States ALUMINUM
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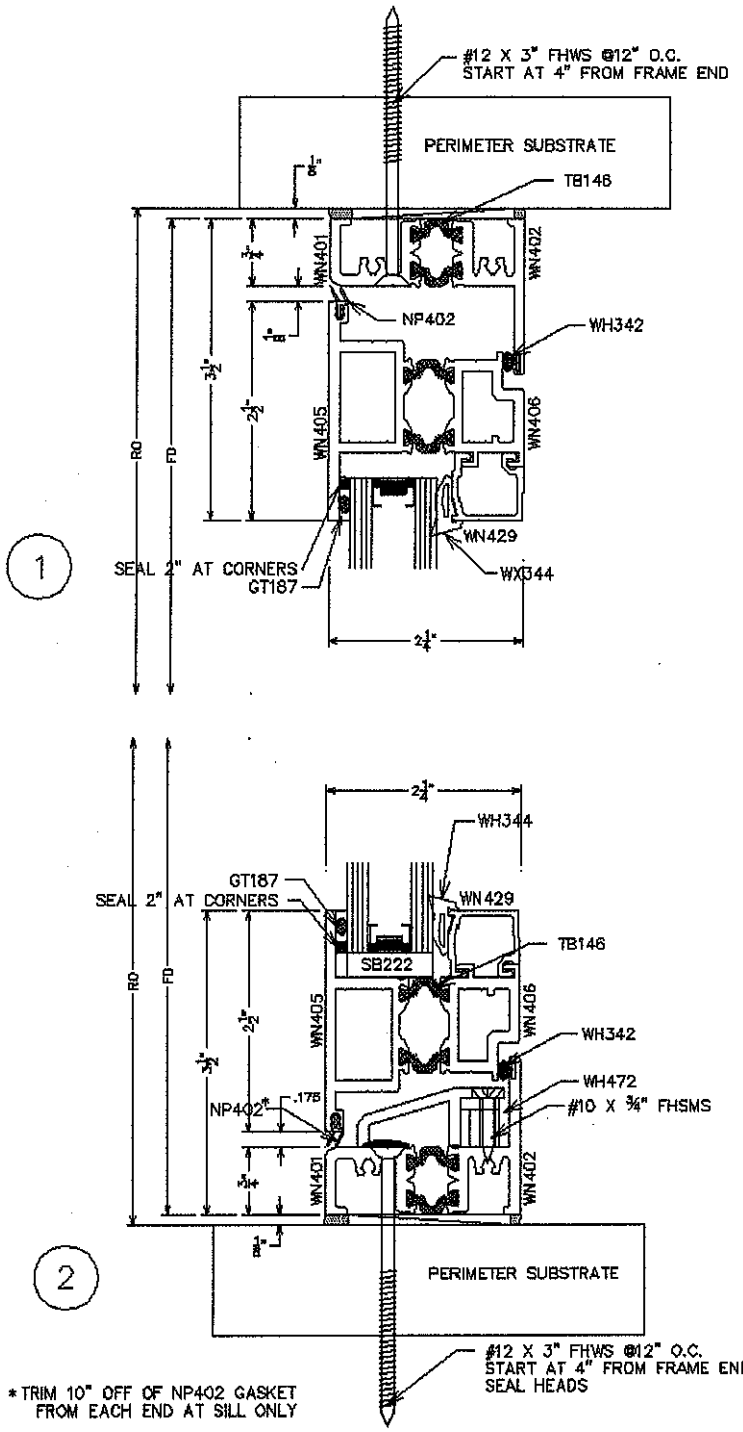
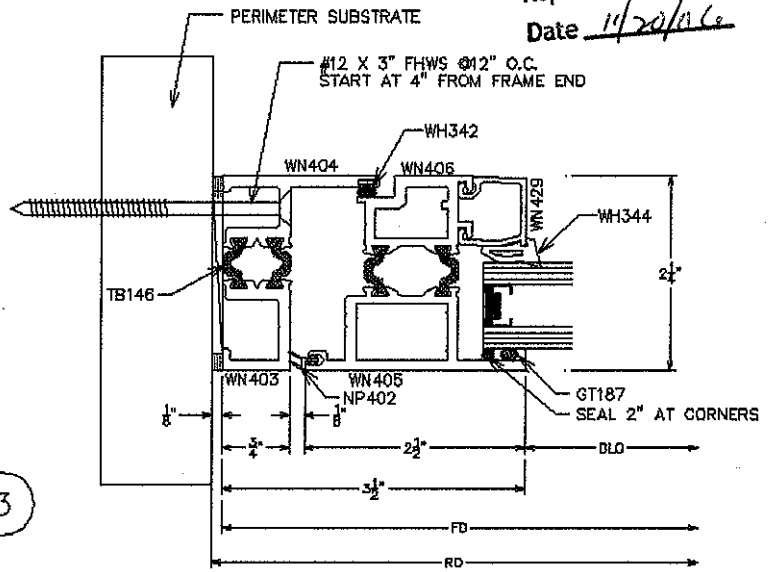


* TRIM 10" OFF OF NP402 GASKET FROM EACH END AT SILL ONLY



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# 68583

Date 11/20/06 Tech

MOCK-UP / JOB NAME	Castro Glass
NAME	JSM
DATE	11-6-2006
SCALE	FULL (AROH O)
DESCRIPTION	7400 CASEMENT WINDOW 1" GLAZING
PAGE	D1

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