Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

DOOR INNOVATIONS

SERIES/MODEL: Bi-Fold Door
PRODUCT TYPE: Six Panel Aluminum Clad Wood Bi-Fold Door

Title	Summary of Results
Air Infiltration	0.04 cfm/ft^2
Water Resistance Test Pressure	0 psf
Uniform Load Deflection Test Pressure	±35.09 psf
Uniform Load Structural Test Pressure	±52.63 psf

Reference should be made to Architectural Testing, Inc. Report No. 92219.01-801-18 for complete test specimen description and data.

2865 Market Loop
Southlake, Texas 76092
phone: 817-410-7202
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www.archtest.com

Architectural Testing

PERFORMANCE TEST REPORT

Rendered to:

DOOR INNOVATIONS
9943 Kemp Forest Dr.
Houston, TX 77080

Report No.:	92219.01-801-18
Test Dates:	06/24/09
Through:	07/28/09
Report Date:	08/12/09
Expiration Date:	07/28/13

Project Summary: Architectural Testing, Inc. was contracted by Door Innovations to perform testing on a Series/Model Bi-Fold, Aluminum Clad Wood Six Panel Bi-Fold Door at the Architectural Testing, Inc. test facility in Southlake, TX. Test specimen description and results are reported herein. The sample was provided by the client.

Test Methods: The test specimen was evaluated in accordance with the following:

ASTM E 283-04, *Test Method for Determining Rate of Airflow Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.*

ASTM E 330-02, *Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

ASTM E 547-00, *Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Cyclic Static Air Pressure Difference.*

Test Specimen Description:

Series/Model: Bi-Fold

Product Type: Aluminum Clad Wood Six Panel Bi-Fold Door

Overall Size: 218-3/4" wide by 99-1/4" high

Leaf Size: 36" wide by 95-1/4" high

Daylight Opening Size: 26-3/4" wide by 82" high

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Test Specimen Description: (Continued)

Overall Area: 150.77 ft^2

Finish: Interior was unfinished wood: Exterior was painted aluminum cladding.

Glazing Details: The panel was interior glazed against a back bedding material and secured with 3/8" x 5/8" wood stop moulding using 18ga x 1" brad nails 1" from the ends and 6"on center thereafter. All panels utilized 3/4" overall insulating glass consisting of 5/32" tempered -1/2" aluminum box spacer system -5/32" tempered.

Weatherstripping:

Description	Quantity	Location
1/2" custom shaped foam-filled vinyl weatherstrip	1	Top rail
1/2" custom shaped foam-filled vinyl weatherstrip	1	Bottom rail
1/2" custom shaped foam-filled vinyl weatherstrip	2	Hinge stile
3/4" custom shaped foam-filled vinyl weatherstrip	1	Frame perimeter

Frame Construction: All frame members were formed from extruded aluminum. The corners were coped and butted and sealed with a foam gasket. The jamb was secured to the head with two #8 x 2-1/2" coarse thread drywall screws and to the threshold with three #8 x 2-1/2" coarse thread drywall screws. The head and jambs were fitted with a custom milled wood stop mould that slid into the end of the extrusions and was secured with #6 x 1/2" screws 6" from the ends and on 12" centers thereafter at the jambs and on 18" centers thereafter at the head.

Panel Construction: The panel rails were laminated finger jointed pine with a 0.050" veneer on the interior and a 0.060" roll form aluminum cladding on the exterior. The panel carrier stiles were laminated finger jointed pine with a 0.05" veneer on the interior and a 0.060" roll form aluminum cladding on the exterior. The panel flush bolt stiles were pine veneered timber strand with a 0.05" veneer on the interior and a 0.060" roll form aluminum cladding on the exterior. The top and bottom rails were joined to the stiles with two (2) 4.0" long x 0.5" diameter wood dowels which were glued in place.

Screen Construction: Not used

Test Specimen Description: (Continued)

Hardware:

Description	Quantity	Location
Barrel hinge	4	Each stile
Head carrier	2	Carrier stile/head track
Threshold roller	2	Carrier stile/threshold track
Upper flush bolt	3	Flush bolt stile
Lower flush bolt	3	Flush bolt stile
Multi-point lockset	1	Lock stile
Multi-point keeper	1	Keeper stile

Drainage:

Description	Quantity	Location
3/16" hole	14	Sill exterior wall
3/16" hole	14	Exterior sill track
3/16" hole	14	Interior sill track

Reinforcement: Not Used

Installation: The test chamber was furred out around the rough opening with 2x SPF lumber. The head was secured with twenty one (21) 5/16" x 4" structural wood screws – five at each end 4" from the end and 3" on center, the remaining eleven screws were 16" on center. The threshold was secured with 1/4" x 2-1/2" Tapcon screws 9" from the ends and 23" on center thereafter. The jambs were secured with #10 x 2-1/2" screws at 7", 17", 42-1/2", 69-1/2", and 88-1/2" from the threshold.

Test Results: The temperature during testing was 84°F. The results are tabulated as follows:

Test Method	Title of Test	Results
ASTM E 283	Air Infiltration 1.57 psf (25 mph)	0.04 cfm/ft^2
ASTM E 547	Water Resistance 0 psf	No leakage

Test Results: (Continued)

ASTM E 330	Uniform Load Deflection	
	(Deflections reported were taken on the lock stile)	
	(Loads were held for 10 seconds)	
	35.09 psf (positive)	1.45"
	35.09 psf (negative)	1.54"
ASTM E 330	Uniform Load Deflection	
	(Deflections reported were taken on the hinge stile)	
	(Loads were held for 10 seconds)	
	35.09 psf (positive)	1.12"
	35.09 psf (negative)	0.65"
ASTM E 330	Uniform Load Structural	
	(Permanent sets reported were taken on the lock stile)	
	(Loads were held for 10 seconds)	
	52.63 psf (positive)	0.06"
	52.63 psf (negative)	0.10"
ASTM E 330	Uniform Load Structural	
	(Permanent sets reported were taken on the hinge stile)	
	(Loads were held for 10 seconds)	
	52.63 psf (positive)	0.05"
	52.63 psf (negative)	0.02"

***General Note**: All testing was performed in accordance with the referenced standards.*

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.

Drawing Reference: The test specimen drawings have been reviewed by Architectural Testing and are representative of the test specimen reported herein.

List of Official Observers:

Name	Company
Terry Boren	Door Innovations
Andy Cost	Architectural Testing, Inc.
Jim Sturdevant	Architectural Testing, Inc.
Jesus Mata	Architectural Testing, Inc.
Evan McCoppin	Architectural Testing, Inc.

Detailed drawings, data sheets, representative samples of test specimens, a copy of this report, or other pertinent project documentation will be retained by Architectural Testing, Inc. for a period of four years from the original test date. At the end of this retention period, such materials shall be discarded without notice and the service life of this report will expire.

Results obtained are tested values and were secured by using the designated test methods. If test specimen contains glazing, no conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen can be made. 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:

Digitally Signed by: James F. Sturdevant

James Sturdevant
Technician

Digitally Signed by: Andy Cost

Andy Cost
Laboratory Manager

JS:hd

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Test Equipment (1)
Appendix-B: Drawings (2)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	08/12/09	N/A	Original report issue

Appendix A

Test Equipment

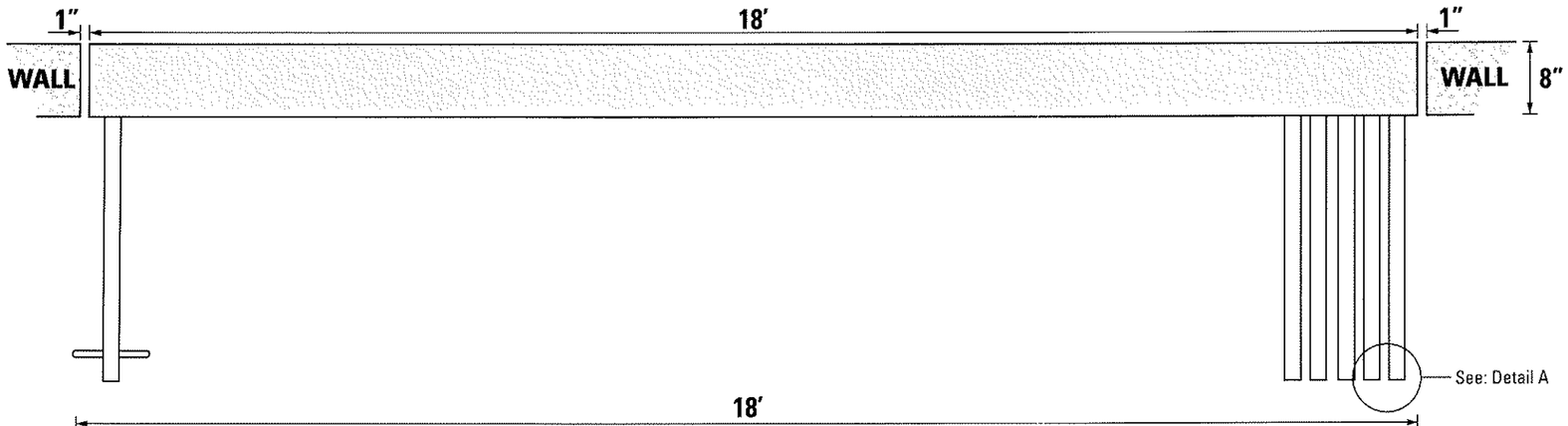
Instrument	Manufacturer	Asset #
BABS II Control panel	ATI	005576
Control panel	ATI	004168
Spray rack	ATI	T003233
Linear transducer	Celesco	T003274
Linear transducer	Celesco	62660
Linear transducer	Celesco	T003272
Linear transducer	Celesco	005203
Linear transducer	Celesco	002756
Linear transducer	Celesco	62662

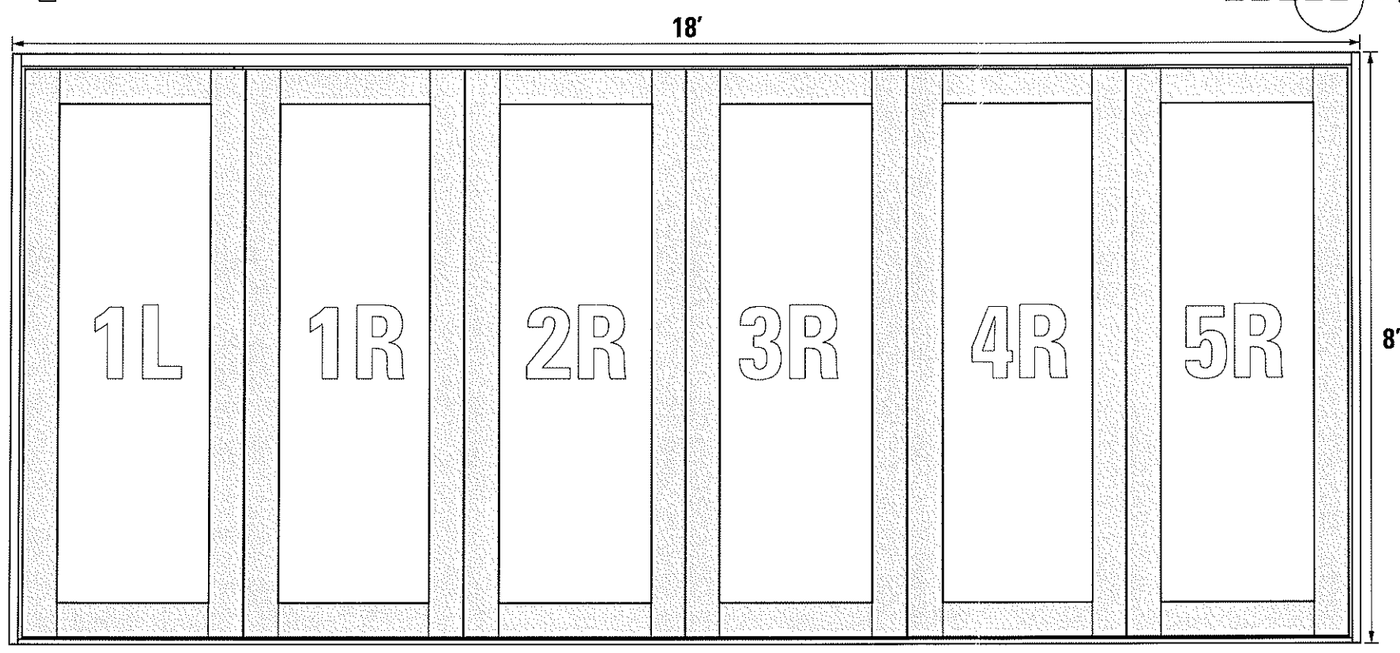
Appendix B

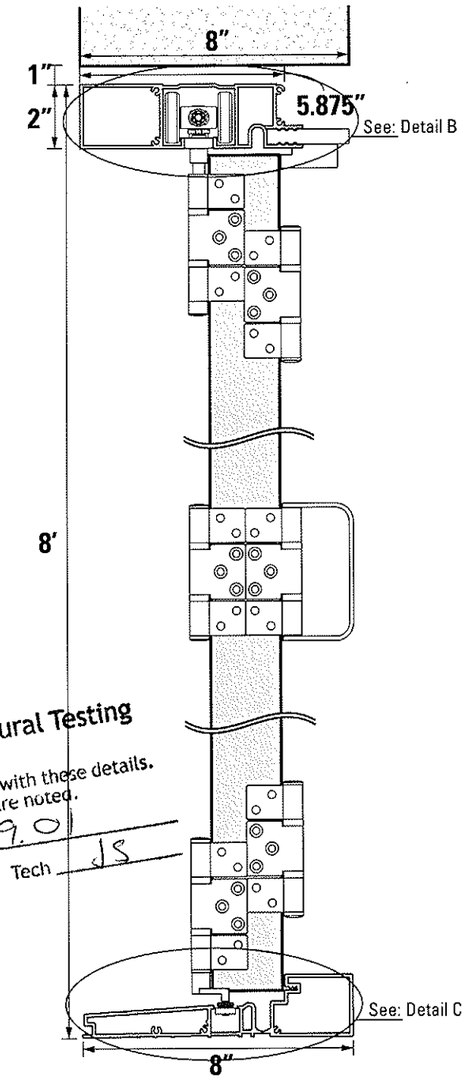
Drawings

Weathertight
EXTERIOR DOOR WALLS

1L5R Outswing







Architectural Testing

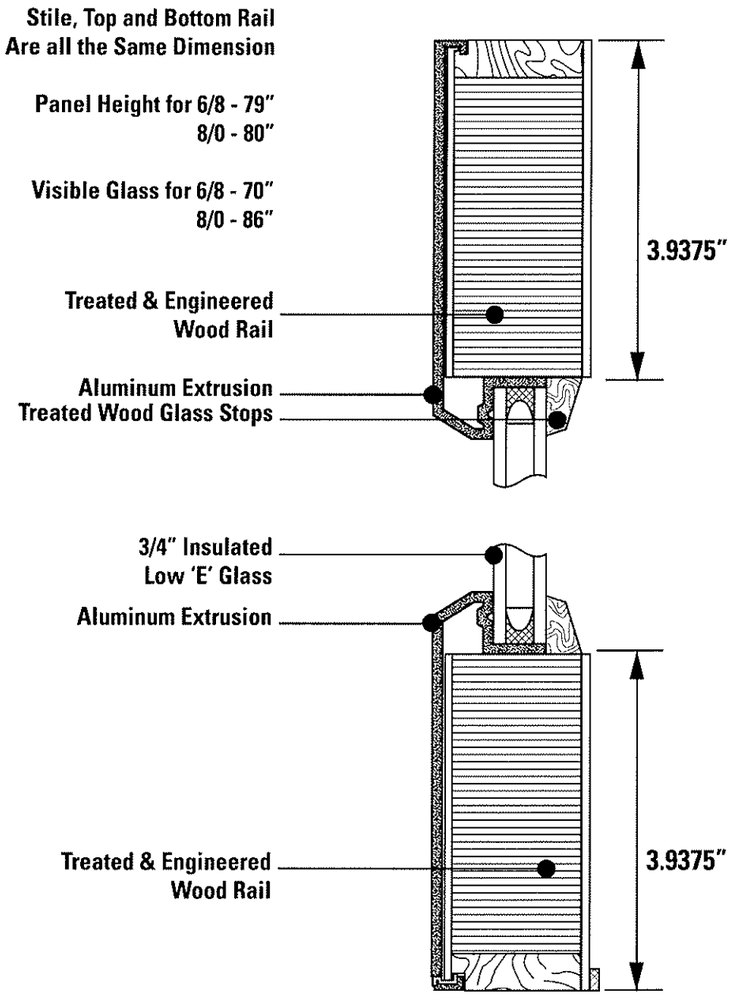
Test sample complies with these details.
Deviations are noted.

Report# 92219.01
Date 8/12/09 Tech JS

Weathertight
EXTERIOR DOOR WALLS

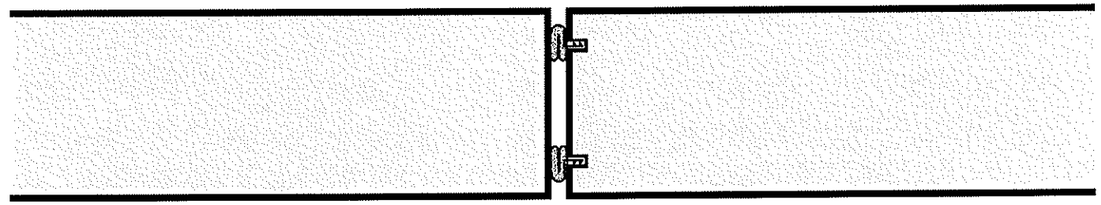
1L5R Outswing - DETAILS

Aluminum Clad Cross Section



Weather striping

A



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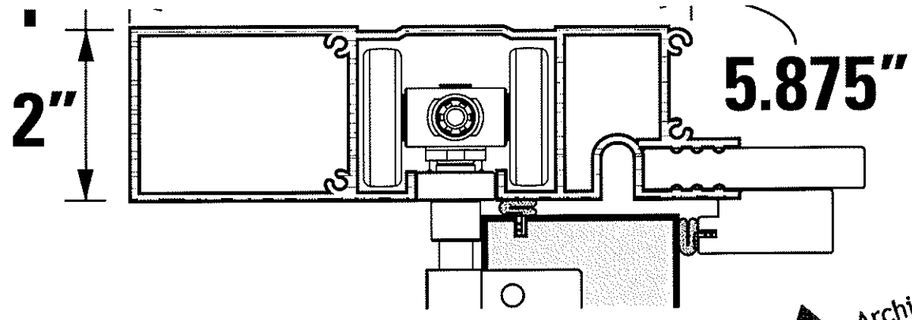
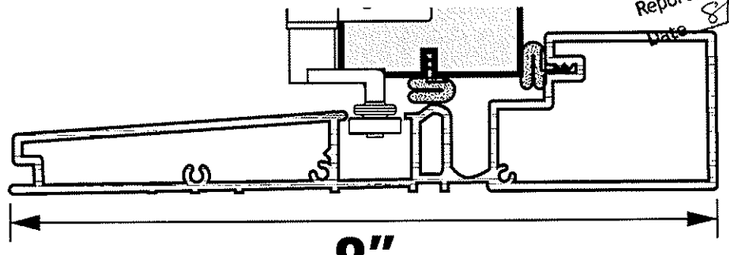


C



Architectural Testing
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