



TEST REPORT

Report No.: E9580.01-301-47

Rendered to:

CR LAURENCE CO., INC.
Vernon, California

PRODUCT TYPE: Out-Swing Aluminum Bi-Fold Door
SERIES/MODEL: Monterey S80

SPECIFICATION(S): AAMA/WDMA/CSA 101/I.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

Title	Summary of Results
AAMA/WDMA/CSA 101/I.S.2/A440-08	Class SP-PG30 Size Tested 2926 x 2599 mm (115-3/16 x 102-5/16 in.)
Design Pressure	±1440 Pa (±30.08 psf)
Air Infiltration	0.3 L/s/m ² (0.05 cfm/ft ²)
Water Penetration Resistance Test Pressure	220 Pa (4.59 psf)

Test Completion Date: 07/15/15

Reference must be made to Report No. E9580.01-301-47, dated 08/27/15 for complete test specimen description and detailed test results.

1.0 Report Issued To: CR Laurence Co., Inc.
2100 East 38th Street
Vernon, California 90058

2.0 Test Laboratory: Architectural Testing, Inc., an Intertek company ("Intertek-ATI")
4 Rancho Circle
Lake Forest, California
949-460-9600

3.0 Project Summary:

3.1 Product Type: Out-Swing Aluminum Bi-Fold Door

3.2 Series/Model: Monterey S80

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test method. The specimen tested successfully met the performance requirements for a **Class SP-PG30 Size Tested 2926 x 2599 mm (115-3/16 x 102-5/16 in.)** rating.

3.4 Test Date: 07/15/15

3.5 Test Record Retention End Date: All test records for this report will be retained until July 15, 2019.

3.6 Test Location: CR Laurence Co., Inc. test facility in Vernon, California. Calibration of test equipment was performed by Intertek-ATI in accordance with AAMA 205-01 "In-Plant Testing Guidelines for Manufacturers and Independent Laboratories".

3.7 Test Specimen Source: The test specimen was provided by the client. Representative samples of the test specimen will be retained by Intertek-ATI for a minimum of four years from the test completion date.

3.8 Drawing Reference: The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix C. Any deviations are documented herein or on the drawings.

3.9 List of Official Observers:

<u>Name</u>	<u>Company</u>
Marco Ramirez	CR Laurence Co., Inc.
Jarod S. Hardman	Intertek-ATI

4.0 Test Specification:

AAMA/WDMA/CSA 101/1.S.2/A440-08, *NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 7.60 m ² (81.86 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall Size	2926	115-3/16	2599	102-5/16
Locking Jamb Panel	941	37-1/16	2434	95-13/16
Center Panel	923	36-5/16	2434	95-13/16
Hinge Jamb Panel	929	36-9/16	2434	95-13/16

5.2 Frame Construction:

Frame Member	Material	Description
Head, Sill, and Jamb	Aluminum	Compensation channel, see attached part #MD80007ML, secured to opening with #8 x 1-5/8" Phillips head screws, two fasteners 3" from each corner and one fastener at 12" on center spacing along the channel.
Sill	Aluminum	Raised bottom track, see attached part #MD80002ML, secured through compensation channel with #10 x 2-1/2" Phillips round head screws 2" from each corner and 12" on center spacing.
Head	Aluminum	Head track, see attached part #MD80001ML, secured through compensation channel with #10 x 2-1/2" Phillips round head screws 2" from each corner and 12" on center spacing.
Jamb	Aluminum	Lateral frame, see attached part #MD80002ML, secured through compensation channel with #10 x 3" Phillips round head screws 2" from each corner and 12" on center spacing.
Corners	Steel	See attached part #MDS80ENDDAM.

5.0 Test Specimen Description: (Continued)

5.2 Frame Construction: (Continued)

	Joinery Type	Detail
All Corners	Flush	End dam sealed at corners with structural silicone sealant and cap bead applied to compensation channel to frame joint and compensation channel to buck joint full perimeter at interior and exterior.

5.3 Panel Construction:

Panel Member	Material	Description
Top Rail, Bottom Rail, and Stiles	Aluminum	Panel frame, see attached part #MD80008ML.
Lock Stile	Aluminum	Jamb extender, see attached part #MD35101, snap fit to lock stile of primary panel and secured with #8 x 1-1/2" Phillips pan head screws 4" from each end and approximately 18" on center spacing.
Top Rail, Bottom Rail, and Stiles	Aluminum	Glass stop, see attached part #MD94302.

	Joinery Type	Detail
All corners exterior side of thermal break	Mitered	Secured at corners with corner block (see attached part #MDCORNERW and MDCORNERWBH), each corner block inserted into adjoining member and retained by three dimples in metal of panel member. Corner block with hole utilized at lock stiles only.
All corners interior side of thermal break	Mitered	Secured at corners with corner block (see attached part #MDAC3501108), each corner block inserted into adjoining member and retained by three dimples in metal of panel member.

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
Rigid EPDM Finger Gasket, see attached part #MDAC350209.	1 row	Inserted into head and sill full length of span.
Bulb Gasket w/ Foam, see attached part #WH343.	1 row	Inserted into innermost leg of frame full perimeter.
Bulb Gasket w/ Foam, see attached part #WH343.	3 rows	Inserted into jambs full length of span.
Bulb Gasket w/ Foam, (see attached part #WH343.)	3 rows	Inserted into stiles of all panels full length of span, except for primary panel lock stile.
Bulb Gasket w/ Foam, (see attached part #WH343.)	2 rows	Inserted into stile of primary panel lock stile full length of span.
Rigid EPDM Finger Gasket, (see attached part #MDAC350209.)	2 rows	Inserted into top and bottom rail of each panel full length of span.

5.5 Glazing: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1" IG	Aluminum Spacer – Dual Seal (A1-D)	5/32" tempered	5/32" tempered	Interior glazed with snap in glazing stop, interior side of glazing pocket sealed with bulb gasket (see attached part #WH343) and exterior side sealed with EPDM wedge gasket (see attached part #MDAC350217).

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Locking Jamb Panel	1	792 x 2301	31-3/16 x 90-19/32	1/2"
Center Panel	1	791 x 2300	31-5/32 x 90-9/16	1/2"
Hinge Jamb Panel	1	793 x 2300	31-7/32 x 90-9/16	1/2"

5.0 Test Specimen Description: (Continued)

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weep Hole	2" x 1/8"	6	Through top horizontal member of the bottom rail of each panel between center and outer leg of extrusion to allow glazing pocket to drain, located at each end of the glazing pocket.
Weep Hole	2" x 1/8"	6	Through lower horizontal member of the bottom rail of each panel between center and outer leg of extrusion to allow glazing pocket to drain, located at each end of the glazing pocket.
Weep Hole	2" x 1/8"	6	Through top horizontal member of the bottom rail of each panel between inner and center leg of extrusion to allow glazing pocket to drain, located at each end of the glazing pocket.
Weep Hole	2" x 1/8"	6	Through lower horizontal member of the bottom rail of each panel between inner and center leg of extrusion to allow glazing pocket to drain, located at each end of the glazing pocket.
Weep Hole	2" x 1/4"	5	Through top horizontal member of the raised bottom track between inner and center leg of extrusion at each jamb and directly below each stile joint.
Weep Hole	2" x 1/4"	5	Through lower horizontal member of the raised bottom track between inner and center leg of extrusion at each jamb and directly below each stile joint.
Weep Hole	2" x 3/8"	5	Through top horizontal member of the raised bottom track between center and outer leg of extrusion at each jamb and directly below each stile joint.
Weep Hole	2" x 3/8"	5	Through lower horizontal member of the raised bottom track between center and outer leg of extrusion at each jamb and directly below each stile joint.

5.0 Test Specimen Description: (Continued)

5.6 Drainage: (Continued)

Drainage Method	Size	Quantity	Location
Weep Hole	3/4" x 3/16"	3	Through bottom of exterior leg of compensation channel and fitted with weep hole cover (<i>see attached part #MDWHC</i>), 8" from each end and mid-span.

5.7 Hardware:

Description	Quantity	Location
Adjustable leveler (<i>see attached Part #AC/35.01.130</i>)	38	Screwed into frame full perimeter approximately 4" from each end and 12" on center spacing.
Large-Handle Catch Assembly (<i>see attached part #MDAC350170580EXT</i>)	2	Located 40" from sill on each lock stile and secured to stile with two #10 x 1-1/2" Phillips oval head SMS through predrilled holes.
1/4"-20 Threaded Rod	4	Attached to the top and bottom of the Large-Handle Catch Assembly, inserted into the lock stile of panels with handle hardware, cut to length for the attachment of catch bolt.
Catch Bolt (<i>see attached part #MDBOLT</i>)	4	Threaded on the threaded rod at the top and bottom of each lock stile.
Rod Spacer (<i>see attached part #AC35.01.55</i>)	4	Inserted into the top and bottom rail at lock stile to guide catch bolt.
Bottom Hinge Assembly (<i>see attached part #MDAC350153B</i>)	1	Located 1-1/8" from bottom rail of stile opposite lock jamb stile and secured to each stile with two #8 x 1/2" Phillips pan head Tek screws.
Top Hinge Assembly (<i>see attached part #MDAC350153T</i>)	1	Located 1-1/8" from top rail of stile opposite lock jamb stile and secured to each stile with two #8 x 1/2" Phillips pan head Tek screws.
Fixed Hinge Assembly (<i>see attached part #MDAC350150</i>)	6	Located 32-1/2" and 64" from sill of each panel to panel joint and at fixed jamb, secured to each stile and lateral frame with two #8 x 1/2" Phillips pan head Tek screws.

5.0 Test Specimen Description: (Continued)

5.8 Reinforcement: No reinforcement was utilized.

5.9 Screen Construction: No screen was utilized.

6.0 Installation:

The specimen was installed into a Pine wood buck. The rough opening allowed for a 1/4" shim space at sill of unit. The exterior perimeter of the window was sealed with structural silicone sealant.

Location	Anchor Description	Anchor Location
Through compensations channel at head and jambs, through raised lower track and compensation channel at sill	#10 x 1" Phillips flat head screw at head and jambs and #10 x 1-1/2" Phillips pan head screw at sill	2" from each corner and 12" on center spacing

7.0 Test Results: The temperature during testing was 25°C (77°F). The results are tabulated as follows:

Title of Test	Results	Allowed	Note
Operating Force, per ASTM E 2068	Initiate motion: 66.7 N (15.0 lbf) Maintain motion: 31.1 N (7.0 lbf) Locks: 8.9 N (2.0 lbf)	135 N (30 lbf) max. 90 N (20 lbf) max. 100 N (22.5 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	0.3 L/s/m ² (0.05 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547 at 140 Pa (2.92 psf)	N/A	N/A	2
Uniform Load Deflection, per ASTM E 330 Deflections taken at center hinge stile +720 Pa (+15.04 psf) -720 Pa (-15.04 psf)	N/A	N/A	2
Uniform Load Structural, per ASTM E 330 Permanent sets taken at center hinge stile +1080 Pa (+22.56 psf) -1080 Pa (-22.56 psf)	N/A	N/A	2
Forced Entry Resistance, per ASTM F 842, Type: A - Grade: 10	Pass	No entry	
Forced Entry Resistance, per AAMA 1304	Pass	No entry	

Test Results: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 at 220 Pa (4.59 psf)	Pass	No leakage	
Uniform Load Deflection, per ASTM E 330 Deflections taken at center hinge stile +1440 Pa (+30.08 psf) -1440 Pa (-30.08 psf)	14.2 mm (0.56") 14.0 mm (0.55")	Report Only	3, 4, 5
Uniform Load Structural, per ASTM E 330 Permanent sets taken at center hinge stile +2160 Pa (+45.11 psf) -2160 Pa (-45.11 psf)	0.5 mm (0.02") 0.3 mm (0.01")	9.1 mm (0.36") max. 9.1 mm (0.36") max.	4, 5

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

Note 2: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

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

Note 4: Loads were held for 10 seconds.

Note 5: 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.

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

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 tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI.

For INTERTEK-ATI:



Digitally Signed by: Jarod Hardman

Jarod S. Hardman
Laboratory Manager



Digitally Signed by: Leaton Kirk

Leaton Kirk
Director – Regional Operations

JSH:ms/jb

Attachments (pages): This report is complete only when all attachments listed are included.

- Appendix-A: Alteration Addendum (1)
- Appendix-B: Location of Air Seal (1)
- Appendix-C: Drawings (33)

Appendix A

Alteration Addendum

Note: *No alterations were required.*

Appendix B

Location of Air Seal: The air seal between the test specimen and the test wall is detailed below. The seal is made of foam weatherstripping and is attached to the edge of the test specimen buck. The test specimen buck is placed against the test wall and clamped in place, compressing the weatherstripping and creating a seal.

