TEST REPORT

Report No.: E1588.02-301-47

Rendered to:

CR LAURENCE CO., INC.
Vernon, California

PRODUCT TYPE: Out-Swing Aluminum Bi-Fold Door
SERIES/MODEL: Monterey S55

Title	Summary of Results
Deflection Test	±1000 Pa
Operating Force Test	8.9 N
Air Infiltration Test	0.1 L/s/m^2
Water Penetration Resistance Test Pressure	150 Pa
Ultimate Strength Test	±1500 Pa

Reference must be made to Report No. E1588.02-301-47, dated 02/24/15 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.
a subsidiary of Intertek (Intertek-ATI)
4 Rancho Circle
Lake Forest, California 92630
949-460-9600

3.0 Project Summary:

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

3.2 Series/Model: Monterey S55

3.3 Compliance Statement: Results obtained are tested values and were secured by using the designated test methods. Test specimen description and results are reported herein.

3.4 Test Dates: 09/29/14 – 01/21/15

3.5 Test Record Retention End Date: All test records for this report will be retained until January 21, 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 Sample 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:

Name	Company
Garrett Osterode	CR Laurence Co., Inc.
Marco Ramirez	CR Laurence Co., Inc.
Ron Wooten	CR Laurence Co., Inc.
Jarod S. Hardman	Intertek-ATI

4.0 Test Methods:

AS 4420.0-1996, *Windows – Methods of test – Part 0: General introduction and list of methods*

AS 4420.1-1996, *Windows – Methods of test – Method 1: Test sample, preparation for tests, and test sequence.*

AS 4420.2-1996, *Windows – Methods of test – Method 2: Deflection test*

AS 4420.3-1996, *Windows – Methods of test – Method 3: Operating force test*

AS 4420.4-1996, *Windows – Methods of test – Method 4: Air infiltration test*

AS 4420.5-1996, *Windows – Methods of test – Method 5: Water penetration resistance test*

AS 4420.6-1996, *Windows – Methods of test – Method 6: Ultimate strength test*

5.0 Test Specimen Description:

5.1 Product Sizes:

Overall Area: 7.52 m^2 (80.94 ft^2)	**Width**		**Height**	
	millimeters	**inches**	**millimeters**	**inches**
Overall size	2926	115-3/16	2570	101-13/64
Primary panel	940	37	2438	96
Secondary panel (x2)	914	36	2438	96

5.0 Test Specimen Description: (Continued)

5.2 Frame Construction:

Frame Member	Material	Description
Head, sill, and jambs	Aluminum	Compensation channel, see attached drawing Die No. 12177, secured to opening at head and jambs with #10 x 1-1/2" Phillips pan head screw, 2" from each corner and 12" on center spacing.
Sill	Plastic	Glazing support shim, inserted into compensation channel prior to raised bottom track being inserted.
Sill	Aluminum	Raised bottom track, see attached drawing Die No. 12180, secured through glazing support shim and compensation channel with one #10 x 1-1/2" Phillips pan head screw, 2" from each end and 12" on center spacing.
Head	Aluminum	Top track, see attached drawing Die No. 12178.
Jambs	Aluminum	Lateral frame, see attached drawing Die No. 12184, secured to compensation channel with adjustable leveler Part #AC/35.01.129.

	Joinery Type	Detail
All corners	Flush	End dam (see attached Drawing No. MD55-001) sealed at corners with structural silicone sealant and cap bead applied to compensation channel to frame joint and compensation full perimeter at the interior and exterior.

5.3 Panel Construction:

Panel Member	Material	Description
Top rail, bottom rail, and stiles	Aluminum	Panel frame, see attached drawing Die No. 12181.
Lock stile	Aluminum	Jamb extender, see attached drawing Die No. 12183, 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.

5.0 Test Specimen Description: (Continued)

5.2 Panel Construction: (Continued)

	Joinery Type	Detail
All corners	Mitered	Secured at corners with corner block (see attached drawing Part No. MDCORNERW and MDCORNERWBH), each corner block inserted into adjoining member and retained by three dimples in metal. Corner block with hole utilized at lock stiles, all other corners were corner block without hole.

5.4 Weatherstripping:

Description	Quantity	Location
Bulb gasket (see attached Drawing No. WH343)	2 rows	Inserted into channels of compensation channel full perimeter of frame.
Foam filled 1/4" bulb gasket	1 row	Inserted into channel of exterior leg of raised top track and bottom track.
Foam filled 1/4" bulb gasket	1 row	Inserted into channel of interior leg of lateral frame.
Foam filled 1/4" bulb gasket	2 rows	Inserted into channels of lateral frame at jambs.
Foam filled 1/4" bulb gasket	1 row	Inserted into channel of glazing beads.
Rigid EPDM gasket (see attached drawing Part No. AC/35.02.09)	1 row	Inserted into innermost channel of top rail of each panel.
Rigid EPDM gasket (see attached drawing Part No. AC/35.02.09)	2 rows	Inserted into innermost and outermost channel of bottom rail of each panel.
Rigid EPDM gasket (see attached drawing Part No. AC/35.02.09)	1 row	Inserted into channel of top track.
EPDM Gasket (see attached drawing Part No. AC/35.02.03)	3 rows	Inserted into channels of hinge stiles of each panel.

5.0 Test Specimen Description: (Continued)

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 with glazing gasket, see attached drawings Die No. 12185 and Part #AC/35.02.17.

Location	Quantity	Daylight Opening		Glass Bite
		millimeters	inches	
Panel	3	2316 x 792	91-3/16 x 31-3/16	1/2"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weep hole	3/4" x 3/16"	7	Through bottom of exterior leg of compensation channel and fitted with weep hole cover (see attached drawing Part #MDWHC), 8" from each end and 16" on center spacing.
Weep hole	2" x 3/8"	8	Through bottom horizontal member of raised bottom track to allow drainage into compensation channel, 5" from each end and 15" on center spacing.
Weep hole	2" x 1/4"	6	Through top horizontal member of the bottom rail of each panel between inner and center leg of extrusion to allow glazing pocked to drain, located at each end of the glazing pocket.
Weep hole	2" x 1/4"	6	Through top horizontal member of the bottom rail of each panel between center and outer leg of extrusion to allow glazing pocked to drain, located at each end of the glazing pocket.

5.0 Test Specimen Description: (Continued)

5.6 Drainage: (Continued)

Drainage Method	Size	Quantity	Location
Weep hole	2" x 1/4"	6	Through lower horizontal member of the bottom rail of each panel between inner and center leg of extrusion to allow the glazing pocket to drain, located at each end of the glazing pocket.
Weep hole	2" x 1/4"	6	Through lower horizontal member of the bottom rail of each panel between center and outer leg of extrusion to allow the glazing pocket to drain, located at each end of the glazing pocket.

5.7 Hardware:

Description	Quantity	Location
Large-Handle Catch Assembly (see attached drawing Part No. MDAC350170EXT)	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 (see attached drawing Part No. MDBOLT)	4	Threaded onto the threaded rod at the top and bottom of each lock stile.
Rod spacer (see attached drawing Part No. AC/35.01.55)	4	Inserted into the top and bottom rail at lock stile to guide the catch bolt.
Bottom hinge assembly (see attached drawing Part No. MDAC350153B)	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 (see attached drawing Part No. MDAC350153T)	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.

5.0 Test Specimen Description: (Continued)

5.7 Hardware: (Continued)

Description	Quantity	Location
Fixed hinge assembly (see attached drawing Part No. MDAC350150)	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 at fixed jamb with two #8 x 1/2" Phillips pan head Tek screws.
Adjustable lever (see attached drawing Part No. AC/35.01.129).	16	Located in lateral frame at jambs, screwed into frame approximately 4" from each end and 12" on center spacing for jamb adjustment.

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. The interior and exterior perimeters of the door were sealed with structural silicone sealant.

Location	Anchor Description	Anchor Location
Through compensation 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 18°C (65°F). The results are tabulated as follows:

AS 4420.2, *Deflection Test*

Load (Pa)	Indicator Location	Measured Displacement (mm)	Mid-span deflection (mm)	Allowed (mm)	Deflection /Span Ratio	Note
+1000	1	4.57	14.61	16.25	1:166	1, 2, 3, 4, 5
	2	19.56				
	3	5.33				
-1000	1	6.10	15.11	16.25	1:161	1, 2, 3, 4, 5
	2	22.35				
	3	8.38				

AS 4420.3, *Operating Force Test*

Title of test	Measured force (N)	Allowed (N)	Note
To initiate movement	8.9	180	1, 5
To sustain movement	8.9	110	1, 5

AS 4420.4, *Air Infiltration Test*

Title of test	Measured infiltration (L/s m²)	Allowed (L/s m²)	Note
Positive air infiltration	0.1	1.0	1, 5
Negative air infiltration	0.1	1.0	1, 5

AS 4420.5, *Water Penetration Resistance Test*

Title of test	Results	Allowed	Note
Water Penetration at 150 Pa	Pass	No uncontrolled water	1, 5

AS 4420.6, *Ultimate Strength Test*

Title of test	Results	Allowed	Note
+1500 Pa	Pass	No collapse	1, 2, 5, 6
-1500 Pa	Pass	No collapse	1, 2, 5, 6

7.0 Test Results: (Continued)

***General Note**: All testing was performed in accordance with the referenced standard(s).*

Note 1: Operation and preloading as described in AS 4420.1 were performed prior to testing.

Note 2: Location of all displacement measuring devices in Appendix A.

Note 3: Span length between supports is 2438 mm.

Note 4: Loads were held for 60 seconds.

Note 5: Test specimen complied with test requirements of AS 2047.1.

Note 6: Loads were held for 10 seconds.

Intertek-ATI will service this report for the entire test record retention period. Test records that are retained 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(s) 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:ss

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix A: Diagrams (1)
Appendix-B: Drawings (33)

Appendix A

Diagrams

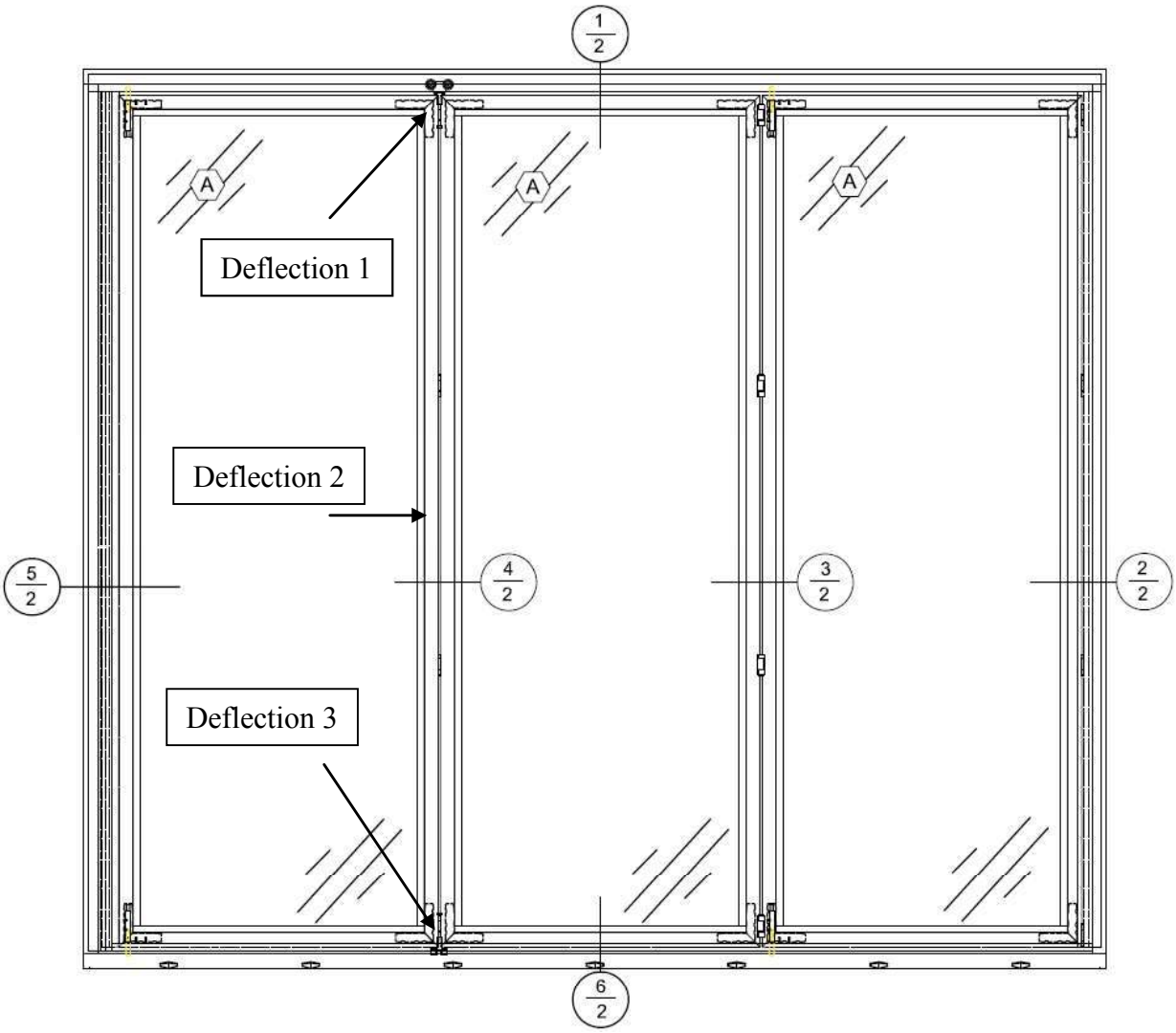
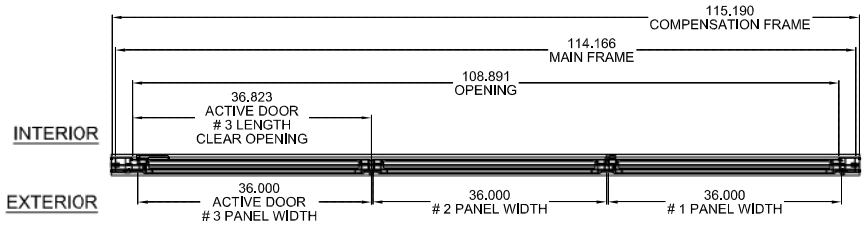


Diagram 1 – Deflection Measurement Locations

Appendix B

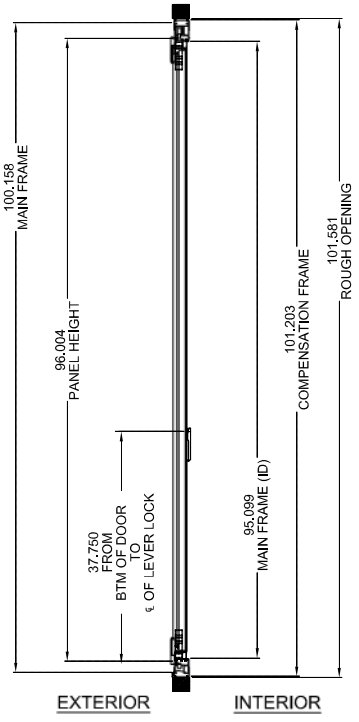
Drawings

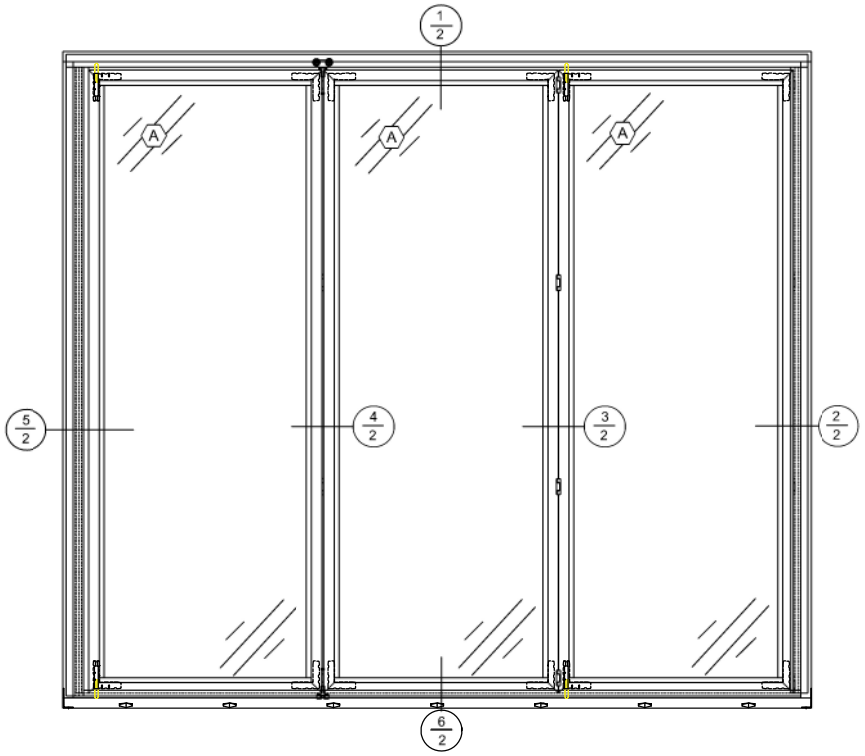
MU2014S55OS14601



Architectural Testing

Report #: E1588-301-47
Date: 02/04/2015
Verified by:





NOTE:
1. PRODUCT TESTING & CERTIFICATION NUMBER: PTC394458
(PRODUCT BEING TESTED: M0NTEREY S55)

REV.	DESCRIPTION	DATE	BY

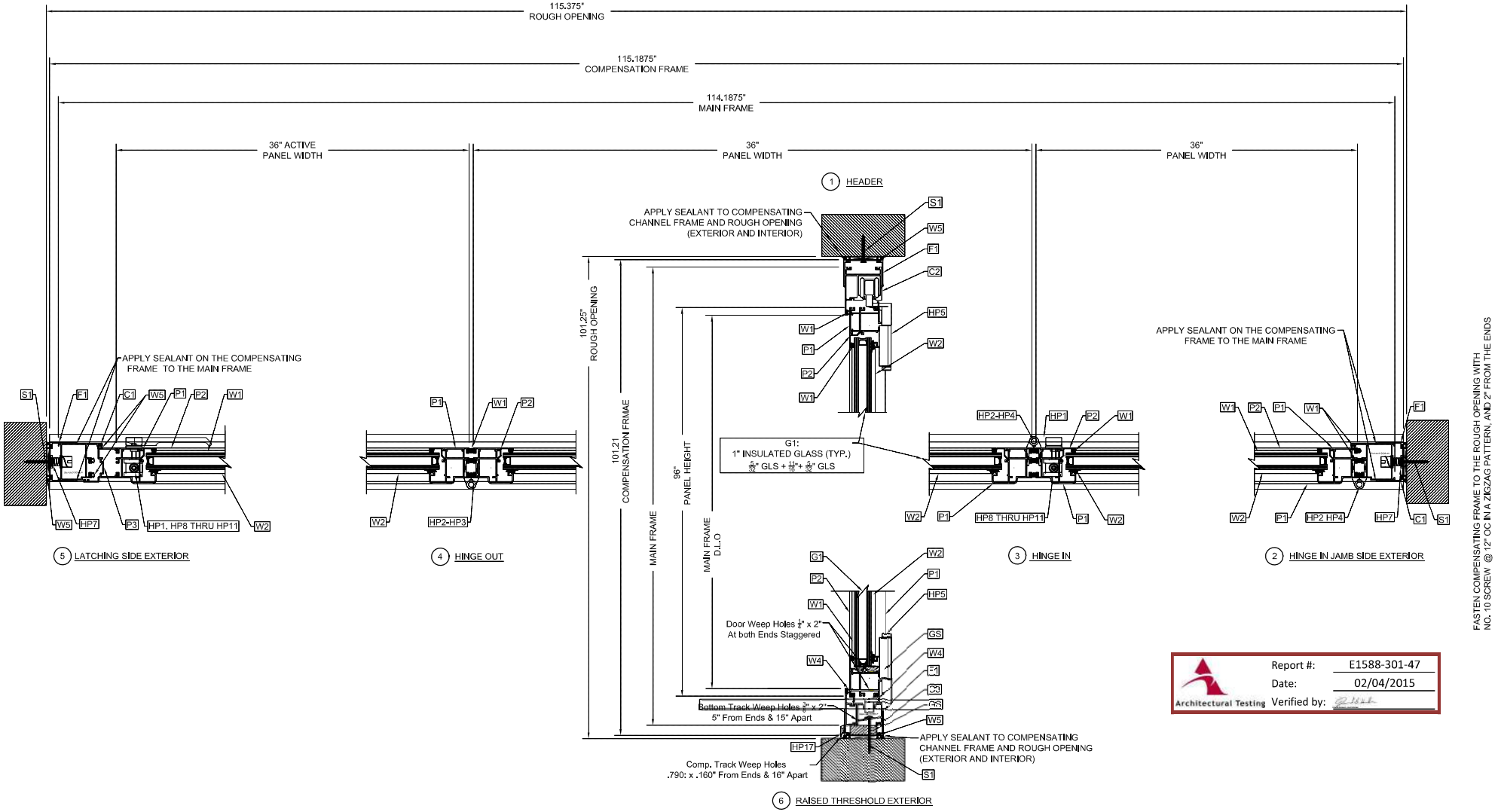
C.R. LAURENCE CO., INC.
CRL MANUFACTURING
2100 E. 38TH STREET
LOS ANGELES, CA 90058

DRAWN BY: MR
DATE: 05.12.2014
SCALE: 1 : 1

TITLE: MONTEREY S55 OUT-SWING
THREE PANEL W/ RAISED TRACK
MOCK-UP DRAWING

DRAWING NO. MU2014S55OS14201

MU2014S55OS14601



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REV.	DESCRIPTION	DATE	BY

C.R. LAURENCE CO., INC.
CRL MANUFACTURING
2100 E. 38TH STREET
LOS ANGELES, CA 90058

DRAWN BY: MR
DATE: 09.17.2014
SCALE: 3/4"=1'-0"

TITLE: MONTEREY S55 OUT-SWING THREE PANEL W/ RAISED TRACK MOCK-UP DRAWING

DRAWING NO. MU2014S55OS14201

ITEM #		PART NO	DESCRIPTION	QTY.
C1	MAIN FRAME	MD45003ML	S55 LATERAL FRAME	1
C2		MD45001ML	S55 TOP FRAME	1
C3		MD45002ML	S55 RAISED BOTTOM TRACK	2
				2
F1		MD45007ML	S55 COMPENSATION CHANNEL	1
	PANEL FRAME			1
P1		MD55006ML	S55 OUT SWING EXTRUSION	1
P2		MD22733ML	S55 GLASS STOP EXTRUSION	1
P3		MD4514ML	S55 JAMB EXTENDER	
S1	FASTENERS	SMS	NO. 10 X 1 1/2 " PAN HEAD SHEET METAL SCREW	1
S2		SMS	NO. 10 X 1 " FLAT HEAD SCREWS	1
S3		6X114PHPSMS	Pan Head Phillips Screw,18-8 Stainless Steel, NO. 6 Size, 1-1/4" Length	1
S4		8X112LHPSMS	Extra-Large Diameter Head Screw #8 Size, 1-1/2" L	1
				1
W1	WTHR STRIP	WH3430012	BULB GASKET	1
W2		MDAC350217	55S GLAZING GASKET	1
W3		MDCA350206	GASKET FOR EVEN HAND LEAVES	1
W4		MDAC350209	PRE-CHAMBER GASKET	1
W5		MDAC350203	SYSTEM VERTICAL LEAF, LATERAL FRAMES, EVEN "U" COMPENSATOR.	
G1	GLASS	GL103115129	1,000 INSULATED GLASS (.15625" + .6875" + .15625") TEMPERED	1 1 1
GS		MDAC3501118ML	GLAZING SUPPORT SHIMS	1
HP1	HARDWARE	MDAC350170EXTB	LARGE HANDLE CATCH ASM	1
HP2		MDAC350150B	MONTEREY FIXED HINGE	1
HP3		MDHP	PIN FOR HINGES	1
HP4		MDPLAS004B	HINGE SPACER	1
HP5		MDAC350153B	WHEEL RUNNER SYSTEM	
HP6		MDAC3501158B	COVER CAP FOR DOOR	1
HP7		MDAC3501129	ADJUSTABLE LEVER	1
HP8		1420TRSS316ASTMA193	316 SS Threaded Rod 1/4"-20 Thread, CUT TO LENGTH(TOP & BTM CATCH)	1
HP9		MDB0LT	UP/BTM CATCH BOLT	1
HP10		MDAC350182ML	ROD SPACER	1
HP11		MDAC350155	ROD END GUIDE	1
HP12		MDCORNERWBH	CORNER BLOCK W/ HOLE	1
HP13		MDCORNERW	CORNER BLOCK WIDE	1
HP14		MDAC350176	S55 MIDRAIL CLEAT	
HP15		MDAC350156ML	SHEAR BLOCK	
HP16		MDS55ENDDAM	DOOR SYSTEM END DAM	
HP17		MDWHCB	WEEP HOLE COVER	

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(PRODUCT BEING TESTED: M0NTEREY S55)

REV.	DESCRIPTION	DATE	BY

C.R. LAURENCE CO. INC.
CRL MANUFACTURING
2100 E. 38TH STREET
LOS ANGELES, CA 90058

DRAWN BY: MR
DATE: 09.17.14
SCALE: NONE

TITLE:
MONTEREY S55 OUT-SWING
THREE PANEL W/ RAISED TRACK
BILL OF MATERIAL

DRAWING NO.
MU2014S55OS14201

SHEET NO. 3 OF 3