



**ASTM E 90 SOUND TRANSMISSION LOSS  
TEST REPORT**

**Rendered to:**

**C.R. LAURENCE CO., INC.**

**SERIES/MODEL: S80 Monterey**

**TYPE: Bi-fold Door**

<b>Summary of Test Results</b>			
<b>Data File No.</b>	<b>Glazing (Nominal Dimensions)</b>	<b>STC</b>	<b>OITC</b>
E1574.01	1" IG (3/16" tempered, 5/8" air space, 3/16" tempered)	32	27

Reference should be made to Architectural Testing, Inc. Report No. E1574.01-113-11 for complete test specimen description. The complete test results are listed in Appendix B.



## ACOUSTICAL PERFORMANCE TEST REPORT

Rendered to:

C.R. LAURENCE CO., INC.  
2100 East 38th Street  
Vernon, California 90058

Report No: E1574.01-113-11  
Test Date: 11/26/14  
Report Date: 12/19/14

### **Test Sample Identification:**

**Series/Model:** S80 Monterey

**Type:** Bi-fold Door

**Overall Frame Size:** 75-1/2" by 82-3/8"

**Glazing (Nominal Dimensions):** 1" IG (3/16" Tempered, 5/8" Air space, 3/16" Tempered)

**Project Scope:** Architectural Testing, Inc. was contracted by C.R. Laurence Co., Inc. to conduct sound transmission loss tests on a Series/Model S80 Monterey, bi-fold door. A summary of the results is listed in the Test Results section, and the complete test data is included as Appendix B of this report. The sample was provided by the client.

**Test Methods:** The acoustical tests were conducted in accordance with the following:

ASTM E 90-09, *Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.*

ASTM E 413-10, *Classification for Rating Sound Insulation.*

ASTM E 1332-10a, *Standard Classification for Rating Outdoor-Indoor Sound Attenuation.*

ASTM E 2235-04 (Reapproved 2012), *Standard Test Method for Determination of Decay Rates for Use in Sound Insulation Test Methods.*

**Test Equipment:** The equipment used to conduct these tests meets the requirements of ASTM E 90. The microphones were calibrated before conducting sound transmission loss tests. The test equipment and test chamber descriptions are listed in Appendix A.

**Sample Installation:** Sound transmission loss tests were initially performed on a filler wall that was designed to test bi-fold door specimens. The filler wall achieved an STC rating of 64.

The specimen plug was removed from the filler wall assembly. Duct seal was used to seal the perimeter of the test specimen to the test opening on both sides. The interior side of the bi-fold door frame, when installed, was approximately 1-1/2" from being flush with the receiving room side of the filler wall. A stethoscope was used to check for any abnormal air leaks around the test specimen prior to testing. The operable panels were opened and closed at least five times prior to testing.

**Test Procedure:** The bi-fold door was closed and locked for this test. The sound transmission loss test was conducted in accordance with the ASTM E 90 test method using a single direction of measurement. The sound transmission loss test consisted of the following measurements: One background noise sound pressure level and five sound absorption measurements were conducted at each of the five microphone positions. Two sound pressure level measurements were made simultaneously in both rooms, at each of the five microphone positions. The air temperature and relative humidity conditions were monitored and recorded during the background, absorption, source, and receive room measurements.

**Sample Descriptions:**

**Frame Construction:**

	<b>Frame</b>
<b>Size</b>	75-1/2" by 82-3/8"
<b>Thickness</b>	3-3/16"
<b>Corners</b>	Butted
Fasteners	Screws
Seal Method	None
<b>Material</b>	Aluminum
Reinforcement	N/A
Thermal Break Material	Insulbar

*N/A-Non Applicable*

**Sample Descriptions:** (Continued)

**Panel Construction:**

	<b>Latch Panel</b>	<b>Panel</b>
<b>Size</b>	34-3/4" by 75-3/4"	34-3/4" by 75-3/4"
<b>Thickness</b>	2-5/8"	2-5/8"
<b>Corners</b>	Mitered	Mitered
Fasteners	Screws	Screws
Seal Method	None	None
<b>Material</b>	Aluminum	Aluminum
Reinforcement	N/A	N/A
Thermal Break Material	Insulbar	Insulbar
<b>Daylight Opening Size</b>	30" by 71"	30" by 71"

**Glazing:**

<b>Measured Overall Insulation Glass Unit Thickness</b>	1.004"
<b>Spacer Type</b>	Aluminum

	<b>Exterior Sheet</b>	<b>Gap</b>	<b>Interior Sheet</b>
<b>Measured Thickness</b>	0.180"	0.646"	0.178"
<b>Muntin Pattern</b>	N/A	N/A	N/A
<b>Material</b>	Tempered	Air*	Tempered
<b>Laminate Material</b>	N/A	N/A	N/A

<b>Glazing Method</b>	Interior
<b>Glazing Material</b>	Flexible wedge gasket
<b>Glazing Bead Material</b>	Aluminum

\* - Stated per Client/Manufacturer, N/A-Non Applicable

**Sample Descriptions:** (Continued)

**Components:**

TYPE	QUANTITY	LOCATION
<b>Weatherstrip</b>		
3/8" Leaf gasket	1 Row	Head and sill
1/2" Leaf gasket	1 Row	Head and sill
1/8" Hollow bulb gasket	4 Rows	Jambs
1/2" Leaf gasket	2 Rows	Rails
1/8" Foam-filled bulb gasket	3 Rows	Stiles
<b>Hardware</b>		
Hinge	5	Jambs
Spring latch	1	Bottom meeting rail
Keeper	2	Head and sill
Weep cover	3	Sill face
Simulated latch	1	Head
<b>Drainage</b>		
3/4" by 3/16" Weep slot	3	Sill face
1-1/2" by 3/16" Weep slot	3	Sill face
2" by 1/4" Weep slot	5	Sill track
2" by 1/2" Weep slot	5	Sill track

**Comments:** The total weight of the sample was 278 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model S80 Monterey, bi-fold door. The dimensions on the drawings that are circled and/or checked were verified against the test specimen. The bi-fold door was disassembled, and the components will be retained by Architectural Testing for four years. A plate was used in the corners of the frame to hold the frame together. Photographs of the test specimen are included in Appendix D.

**Test Results:** The STC (Sound Transmission Class) rating was calculated in accordance with ASTM E 413. The OITC (Outdoor-Indoor Transmission Class) was calculated in accordance with ASTM E 1332. A summary of the sound transmission loss test results on the Series/Model S80 Monterey, bi-fold door is listed below.

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
E1574.01	1" IG (3/16" tempered, 5/8" air space, 3/16" tempered)	32	27

The complete test results are listed in Appendix B. Flanking limit tests and reference specimen tests are available upon request.

Architectural Testing 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 Architectural Testing for the entire test record retention period. The test record retention period ends four years after the test date.

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 Architectural Testing.

For ARCHITECTURAL TESTING, INC:

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Zachary Golden  
Technician - Acoustical Testing

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Todd D. Kister  
Laboratory Supervisor - Acoustical Testing

ZPG:jmcs

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

- Appendix-A: Equipment description (1)
- Appendix-B: Complete test results (2)
- Appendix-C: Design drawings (4)
- Appendix-D: Photographs (1)

### Revision Log

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	12/19/14	N/A	Original Report Issue

## Appendix A

### Instrumentation:

Instrument	Manufacturer	Model	Description	ATI Number	Date of Calibration
Data Acquisition Unit	National Instruments	PXI-1033	Data Acquisition card	65127	04/14 *
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	11/13
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	11/13
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	65103	05/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64905	11/13
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64906	11/13
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	65316	08/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65315	08/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65320	08/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65319	08/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65318	08/14
Receive Room Environmental Indicator	Vaisala	HMW92	Temperature Humidity Sensor	64286	06/14
Source Room Environmental Indicator	Vaisala	HMW60Y	Temperature and Humidity Sensor	Y002653	06/14
Microphone Calibrator	Norsonic	1251	Pistonphone Calibrator	65105	04/14

\*- Note: The calibration frequency for this equipment is every two years per the manufacturer's recommendation.

### Test Chamber:

	Volume	Description
Receive Room	234 m <sup>3</sup> (8291.3 ft <sup>3</sup> )	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m <sup>3</sup> (7296.3 ft <sup>3</sup> )	Stationary diffusers only Temperature and humidity controlled

	Maximum Size	Description
TL Test Opening	4.27 m (14 ft) wide by 3.05 m (10 ft) high	Vibration break between source and receive rooms

N/A-Non Applicable





E1574.01-113-11

**Appendix B**  
**Complete Test Results**



**AIRBORNE SOUND TRANSMISSION LOSS**  
ASTM E 90

<b>Test Date</b>	11/26/14
<b>Data File No.</b>	E1574.01
<b>Client</b>	C.R. Laurence Co., Inc.
<b>Description</b>	Series/Model: S80 Monterey, bi-fold door with 1" IG (3/16" tempered, 5/8" air space, 3/16" tempered)
<b>Specimen Area</b>	4.01 m <sup>2</sup>
<b>Technician</b>	Zach Golden

<b>Freq</b> (Hz)	<b>Background SPL</b> (dB)	<b>Absorption</b> (m <sup>2</sup> )	<b>Source SPL</b> (dB)	<b>Receive SPL</b> (dB)	<b>Specimen TL</b> (dB)	<b>95% Confidence Limit</b>	<b>Number of Deficiencies</b>
80	36.5	5.1	105	85	21.0	2.17	-
100	34.3	5.7	106	78	27.0	1.51	-
125	35.0	4.8	107	84	21.6	1.16	0
160	40.4	4.6	105	83	21.4	0.76	0
200	37.6	4.5	105	86	18.5	0.60	3
250	31.1	5.0	106	83	21.6	0.80	3
315	23.1	5.6	100	73	25.7	0.51	2
400	23.9	5.9	100	70	28.4	0.36	3
500	21.9	6.4	100	69	29.0	0.50	3
630	19.8	6.0	102	70	30.2	0.26	3
800	17.5	6.1	101	66	33.1	0.13	1
1000	12.8	6.1	99	63	34.7	0.21	0
1250	11.5	6.8	97	57	37.8	0.14	0
1600	9.0	7.1	101	59	39.0	0.13	0
2000	6.4	7.3	99	58	38.5	0.32	0
2500	5.7	8.2	98	62	32.6	0.11	3
3150	6.2	9.7	98	61	34.0	0.21	2
4000	7.2	11.8	98	54	39.3	0.18	0
5000	8.1	14.8	96	48	41.7	0.29	-

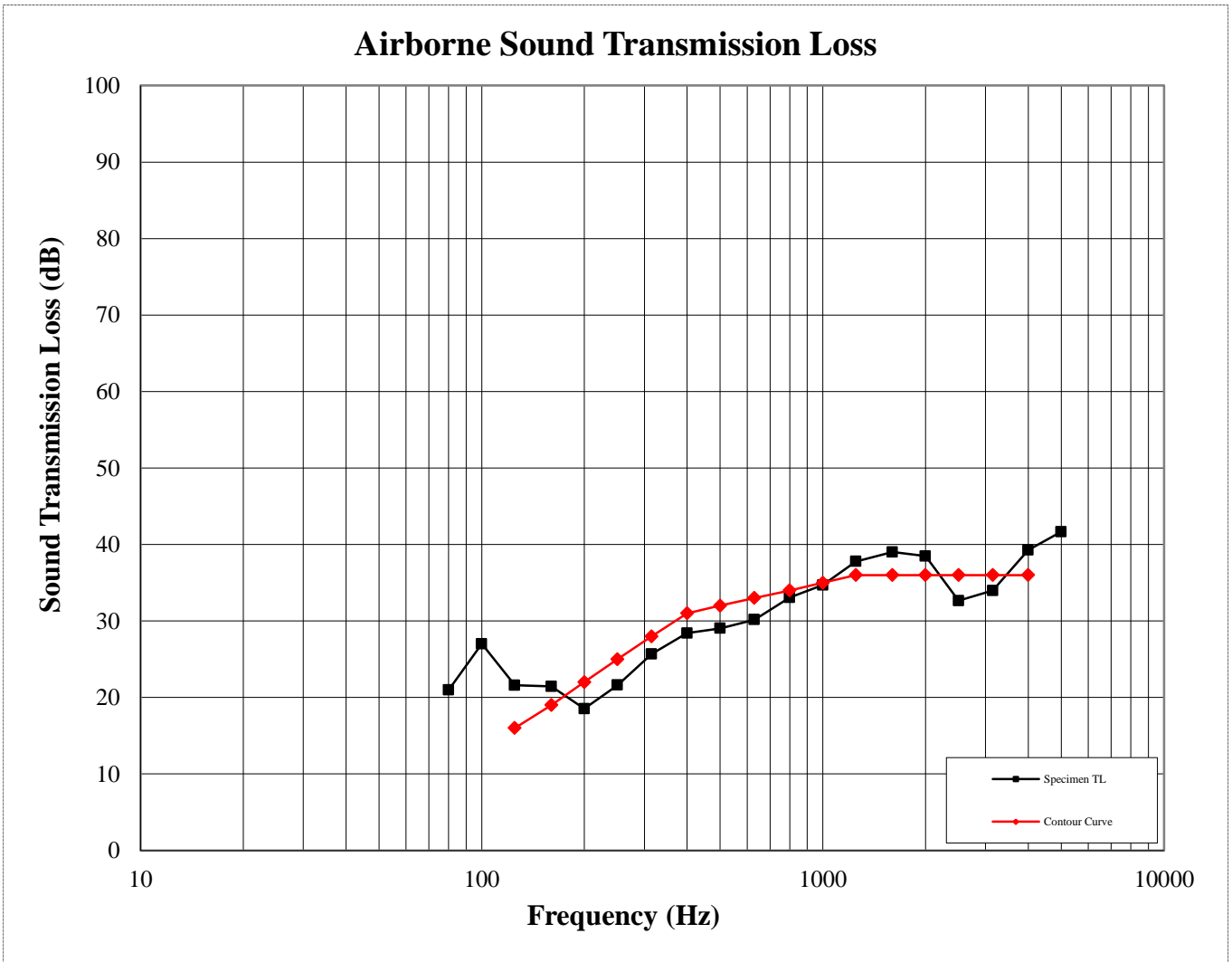
**STC Rating**        **32**        *(Sound Transmission Class)*  
**Deficiencies**        **23**        *(Sum of Deficiencies)*  
**OITC Rating**        **27**        *(Outdoor-Indoor Transmission Class)*

*Notes:*  
1) Receive Room levels less than 5 dB above the Background levels are highlighted in yellow.  
2) Specimen TL levels listed in red indicate the lower limit of the transmission loss.  
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied



**AIRBORNE SOUND TRANSMISSION LOSS**  
ASTM E 90

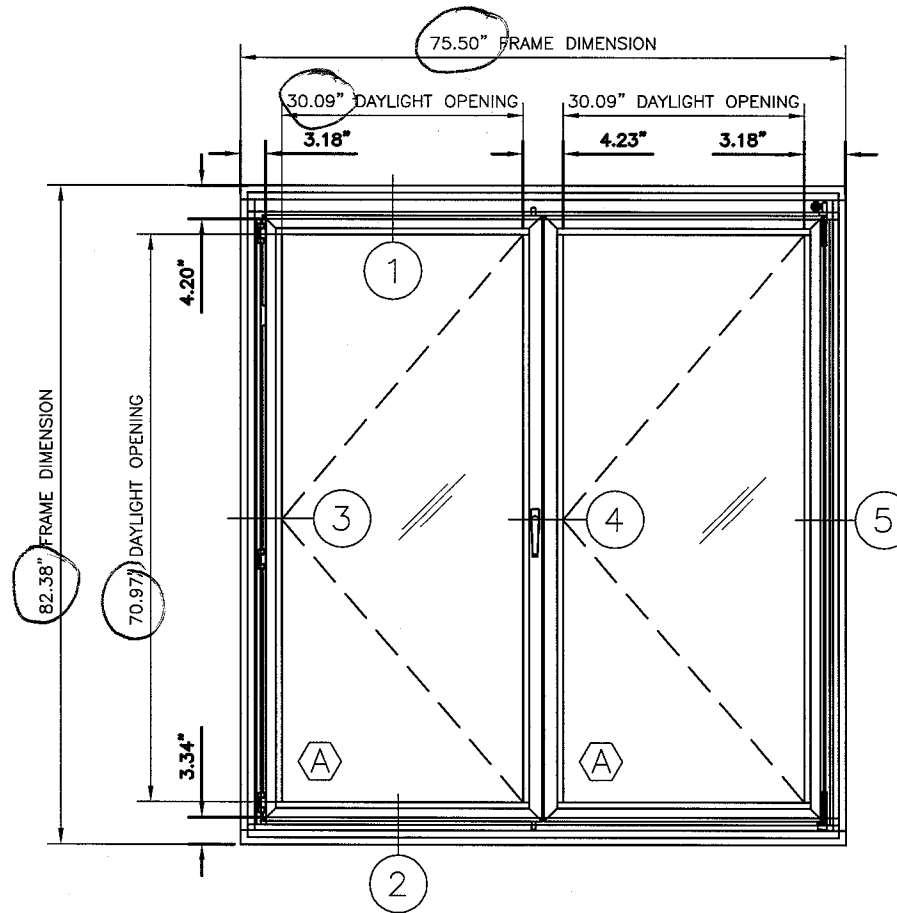
Test Date	11/26/14
Data File No.	E1574.01
Client	C.R. Laurence Co., Inc.
Description	Series/Model: S80 Monterey, bi-fold door with 1" IG (3/16" tempered, 5/8" air space, 3/16" tempered)
Specimen Area	4.01 m <sup>2</sup>
Technician	Zach Golden





E1574.01-113-11

**Appendix C**  
**Design Drawings**



QTY. = 1

**Architectural Testing**  
 Test sample complies with these details.  
 Deviations are noted.  
 Report# E1574,01-113-11  
 Date 12/15/14 Tech ZPG

SYMBOL KEY		
SYMBOL	DESCRIPTION	QTY.
Ⓐ	1" INSULATED GLASS 31.350 X 72.235 .250 CLR, LOW-E #2 SURFACE, BUTYL, NO GAS .500 MILL ALUM SPACER, AIR .250 PPG SOLARBAN 60,	2

REV.	DESCRIPTION	DATE	BY

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 CRL MANUFACTURING  
 2100 E. 38TH STREET  
 LOS ANGELES, CA 90058

DRAWN BY: **GHK**  
 DATE: 12.02.14

TITLE:  
**ACOUSTIC TEST SAMPLE  
 ELEVATION**  
 PRODUCT: MONTEREY SERIES S80 BI-FOLD DOOR

DRAWING NO.  
 MU2014-336-01

Sheet No. 1 of 4 Sheets

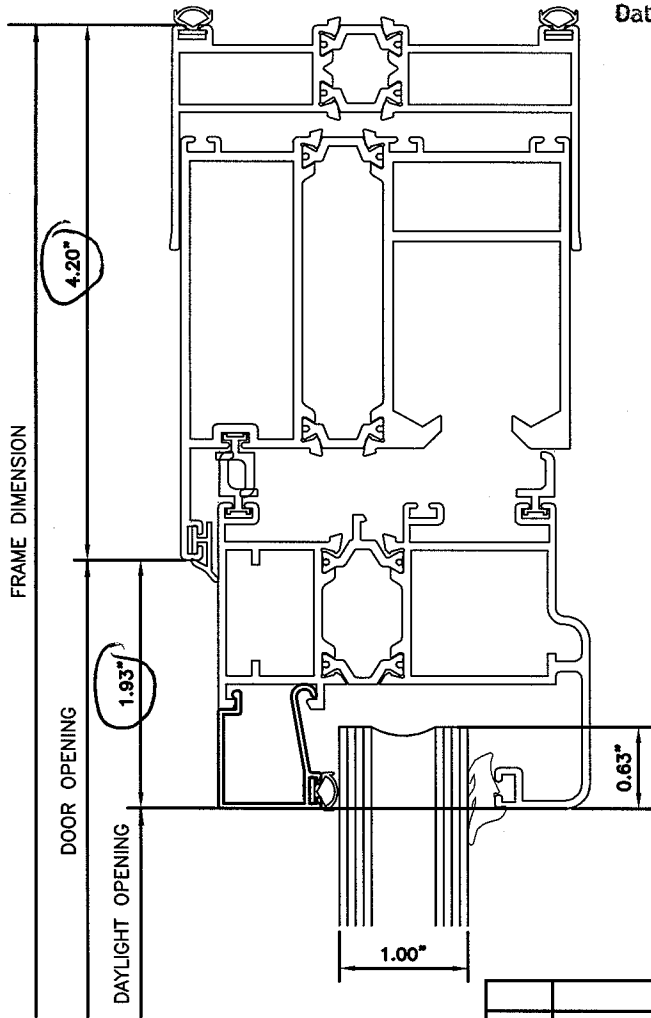
SCALE: 3/4" = 1'-0"

Test sample complies with these details.  
Deviations are noted.

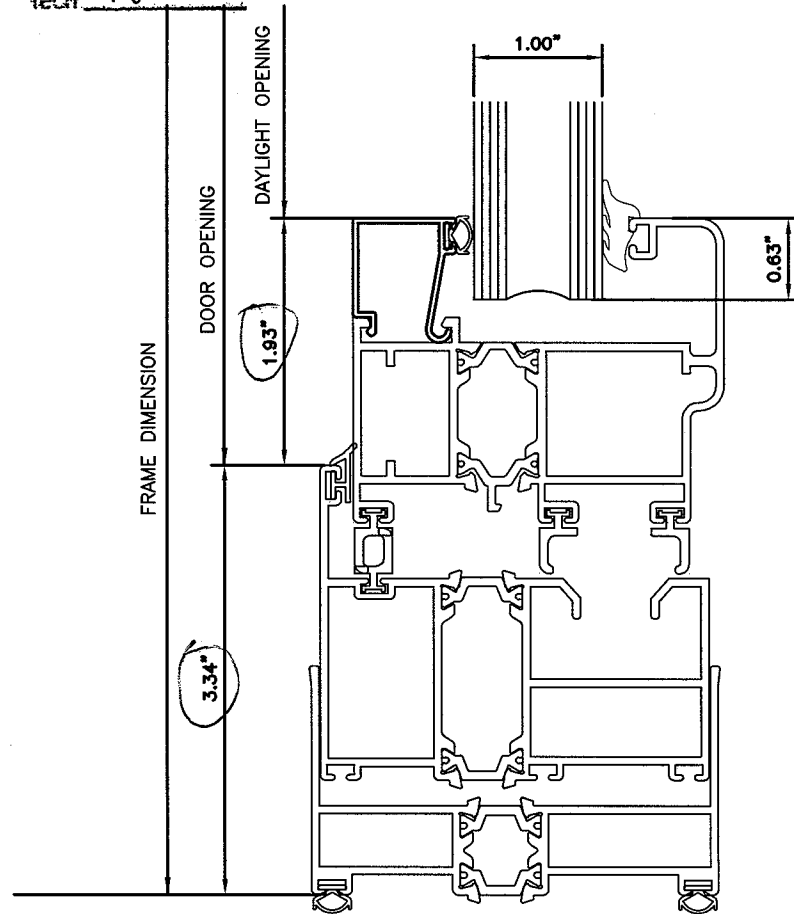
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DATE: 12.02.14  
SCALE: FULL



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

TITLE:  
ACOUSTIC TEST SAMPLE  
HORIZONTAL SECTION  
PRODUCT: MONTEREY SERIES 580 BI-FOLD DOOR

DRAWING NO.  
MU2014-336-01  
Sheet No. 2 of 4 Sheets

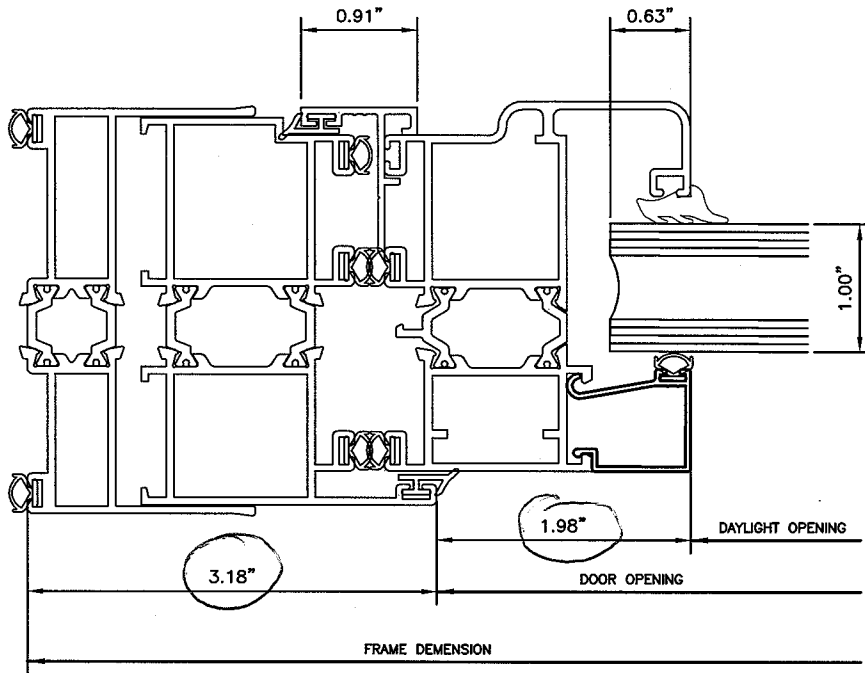


# Architectural Testing

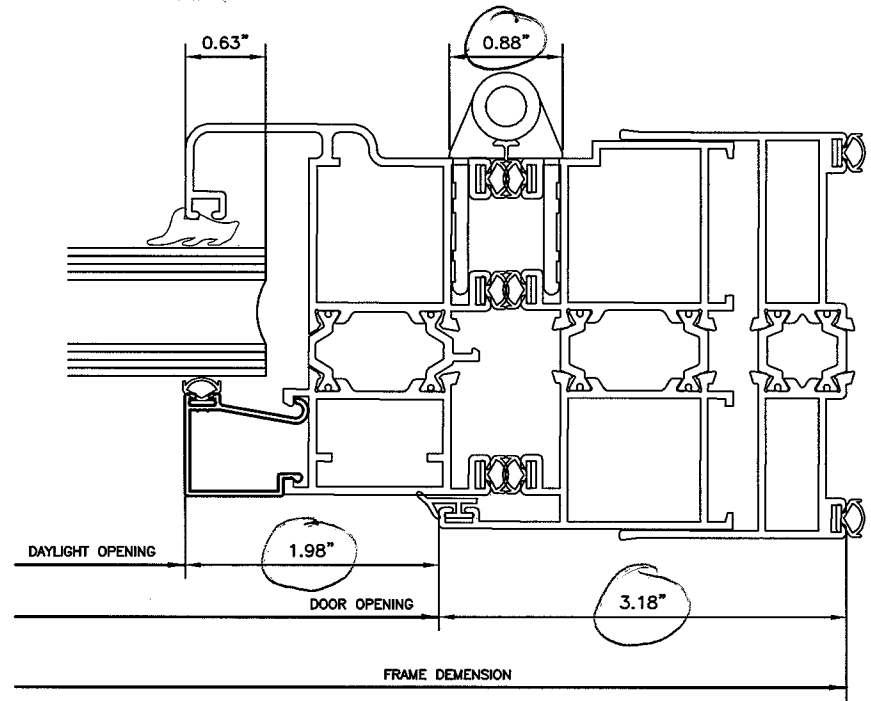
Test sample complies with these details.  
Deviations are noted.

MU2014-336-01


Report# E 1574, 01-113-11  
Date 12/15/14 Tech ZPG



3



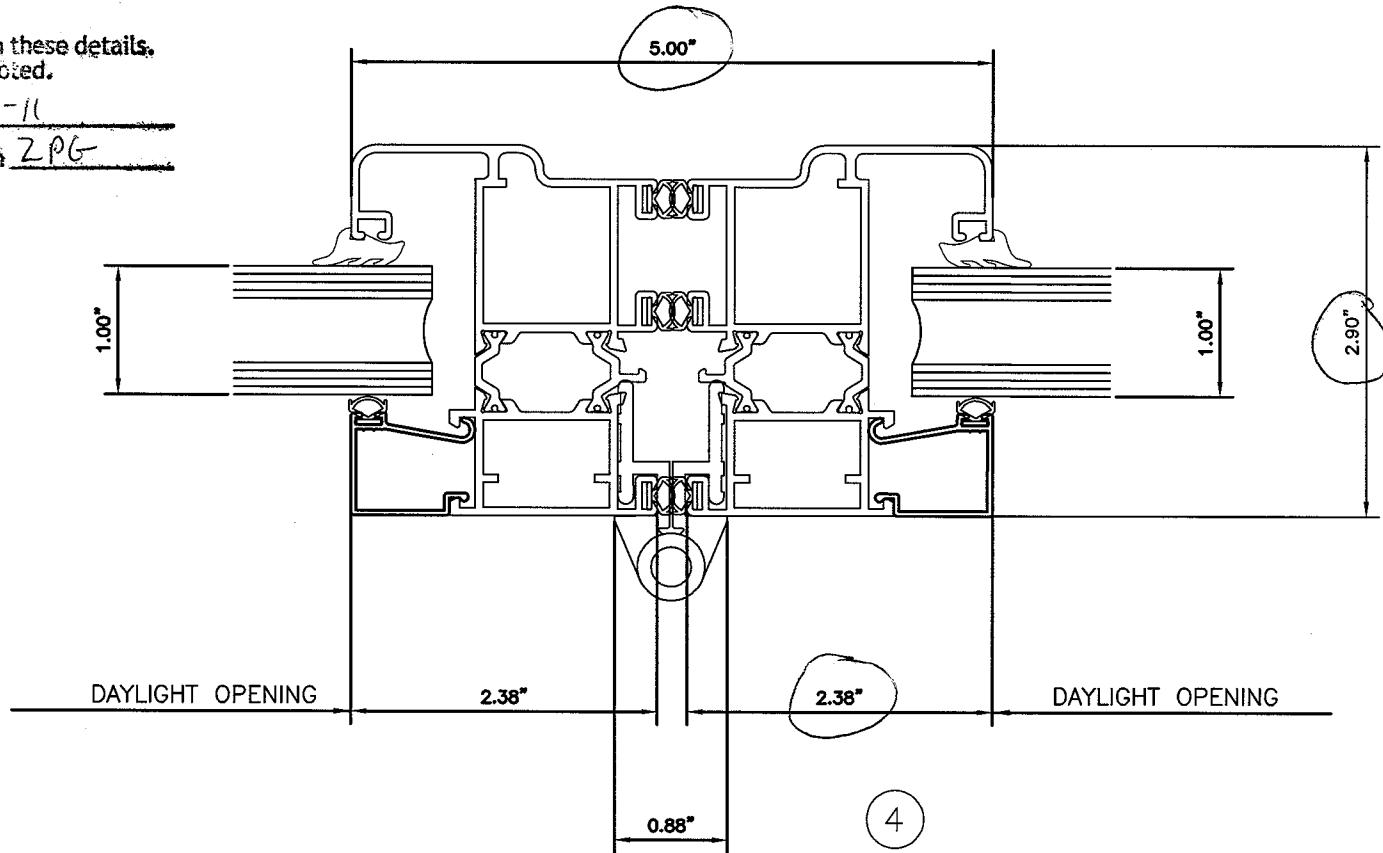
5

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				DRAWN BY: GHK DATE: 12.02.14	TITLE: ACOUSTIC TEST SAMPLE VERTICAL SECTION PRODUCT: MONTEREY SERIES S80 BI-FOLD DOOR		
REV.	DESCRIPTION	DATE	BY	SCALE: FULL			



Test sample complies with these details.  
Deviations are noted.

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				DRAWN BY: GHK DATE: 12.02.14	TITLE: ACOUSTIC TEST SAMPLE VERTICAL SECTION PRODUCT: MONTEREY SERIES S80 BI-FOLD DOOR		
REV.	DESCRIPTION	DATE	BY	SCALE: FULL			



**Appendix D**

**Photographs**



**Receive Room View of Installed Specimen**



**Source Room View of Installed Specimen**