

**ASTM E 90 SOUND TRANSMISSION LOSS  
TEST REPORT****Rendered to:****C.R. LAURENCE CO., INC.****SERIES/MODEL: HP3253/HP3253SG****TYPE: Two-Lite Curtain Wall System**

<b>Summary of Test Results</b>			
<b>Data File No.</b>	<b>Glazing (Nominal Dimensions)</b>	<b>STC</b>	<b>OITC</b>
E0675.01	2" IG (1/4" tempered exterior, 5/8" air space, 1/4" tempered, 5/8" air space, 1/4" tempered interior)	34	27

Reference should be made to Architectural Testing, Inc. Report No. E0675.01-113-11 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: E0675.01-113-11  
Test Date: 12/03/14  
Report Date: 01/06/15

**Test Sample Identification:**

**Series/Model:** HP3253/HP3253SG

**Type:** Two-Lite Curtain Wall System

**Overall Size:** 78-15/16" by 78-3/4"

**Glazing (Nominal Dimensions):** 2" IG (1/4" Tempered Exterior, 5/8" Air Space, 1/4" Tempered, 5/8" Air Space, 1/4" Tempered Interior)

**Project Scope:** Architectural Testing, Inc. was contracted by C.R. Laurence Co., Inc. to conduct sound transmission loss tests on a Series/Model HP3253/HP3253SG, two-lite curtain wall system. 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 curtain wall specimens. The filler wall achieved an STC rating of 63.

The specimen plug was removed from the filler wall assembly. The curtain wall system was placed on a foam isolation pad in the test opening. Duct seal was used to seal the perimeter of the test specimen to the test opening on both sides. The interior side of the curtain wall frame, when installed, was approximately 1/4" 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.

**Test Procedure:** The sound transmission loss test was performed 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:

Frame	
<b>Size</b>	78-15/16" by 79-3/4"
<b>Thickness</b>	8-1/8"
<b>Corners</b>	Butted
Fasteners	Screws
Seal Method	None
<b>Material</b>	Aluminum
Thermal Break Material	Insulbar
Reinforcement	N/A
<b>Daylight Opening Size (x2)</b>	35-3/4" by 73-5/8"

N/A-Non Applicable

**Sample Descriptions:** (Continued)**Glazing:**

<b>Measured Overall Insulation Glass Unit Thickness</b>	1.950"				
<b>Spacer Type</b>	Aluminum				

	Exterior Sheet	Gap	Sheet	Gap	Interior Sheet
<b>Measured Thickness</b>	0.232"	0.638"	0.229"	0.631"	0.220"
<b>Muntin Pattern</b>	N/A	N/A	N/A	N/A	N/A
<b>Material</b>	Tempered	Air*	Tempered	Air*	Tempered
<b>Laminate Material</b>	N/A	N/A	N/A	N/A	N/A

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

**Components:**

	TYPE	QUANTITY	LOCATION
<b>Weatherstrip</b>			
	No weatherstrip		
<b>Hardware</b>			
	No hardware		
<b>Drainage</b>			
	No drainage		

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

**Comments:** The weight of the test sample was 434 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model HP3253/HP3253SG, two-lite curtain wall system. The dimensions on the drawings that are circled and/or checked were verified against the test specimen. The curtain wall system was disassembled, and the components will be retained by Architectural Testing for four years. 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 HP3253/HP3253SG, two-lite curtain wall system is listed below.

Summary of Test Results			
Data File No.	Glazing (Nominal Dimensions)	STC	OITC
E0675.01	2" IG (1/4" tempered exterior, 5/8" air space, 1/4" tempered, 5/8" air space, 1/4" tempered interior)	34	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 (3)
- Appendix-D: Photographs (1)

**Revision Log**

<u>Rev. #</u>	<u>Date</u>	<u>Page(s)</u>	<u>Revision(s)</u>
0	01/06/15	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	PBC Piezotronics	378B20	Microphone and Preamplifier	65316	08/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65315	08/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65320	08/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65319	08/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	65318	08/14
Receive Room Microphone	PBC Piezotronics	378B20	Microphone and Preamplifier	64907	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64908	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64909	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64910	11/14
Receive Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64911	11/14
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

## Appendix B

### Complete Test Results

## AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	12/03/14
Data File No.	E0675.01
Client	C.R. Laurence Co., Inc.
Description	Series/Model: HP3253/HP3253SG, two-lite curtain wall system with 2" IG (1/4" tempered exterior, 5/8" air space, 1/4" tempered, 5/8" air space, 1/4" tempered interior)
Specimen Area	4.01 m <sup>2</sup>
Technician	Daniel P. Platts

Freq (Hz)	Background SPL (dB)	Absorption (m <sup>2</sup> )	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	38.8	5.7	104	84	20.3	1.59	-
100	35.4	5.7	106	83	21.6	1.64	-
125	37.2	4.6	105	85	18.7	1.36	0
160	40.8	4.7	105	84	19.9	1.09	1
200	39.6	4.6	106	84	21.4	0.47	3
250	33.7	4.9	105	80	24.1	0.77	3
315	27.2	5.5	100	75	23.9	0.39	6
400	23.8	5.8	99	67	31.0	0.39	2
500	20.0	6.2	100	65	33.2	0.34	1
630	16.8	6.0	101	65	34.3	0.41	1
800	15.0	5.9	101	63	36.1	0.20	0
1000	12.0	6.0	99	57	39.9	0.23	0
1250	9.5	6.6	97	54	41.0	0.34	0
1600	7.3	7.1	100	60	37.8	0.28	0
2000	5.4	7.4	99	63	32.9	0.24	5
2500	5.0	8.3	97	62	32.1	0.20	6
3150	5.0	10.1	98	58	36.0	0.27	2
4000	5.6	12.2	97	51	40.7	0.29	0
5000	6.0	15.7	95	43	46.1	0.22	-

**STC Rating** **34** (Sound Transmission Class)Deficiencies **30** (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.

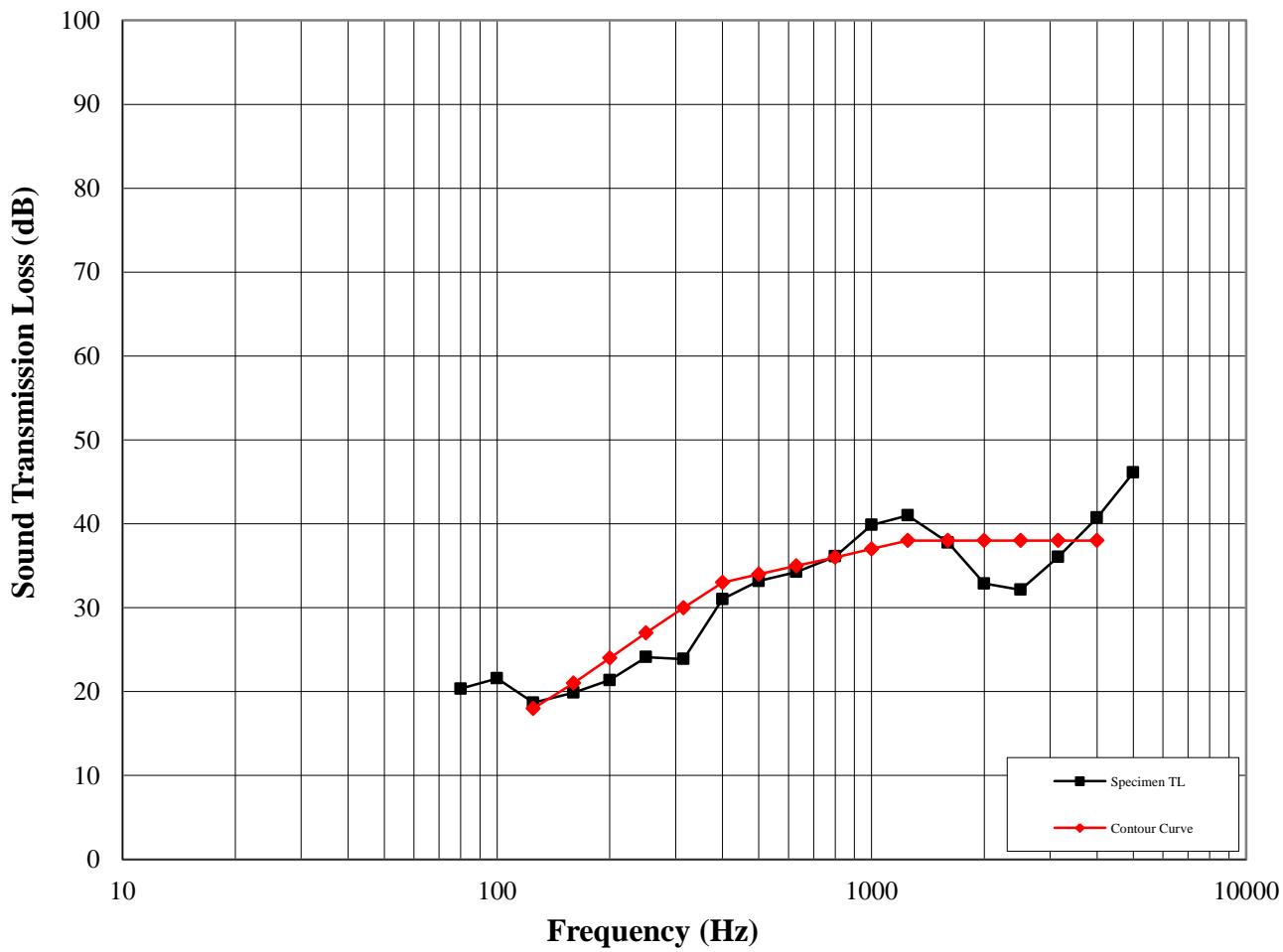
3) Specimen TL levels listed in green indicate that there has been a filler wall correction applied

## AIRBORNE SOUND TRANSMISSION LOSS

ASTM E 90

Test Date	12/03/14
Data File No.	E0675.01
Client	C.R. Laurence Co., Inc.
Description	Series/Model: HP3253/HP3253SG, two-lite curtain wall system with 2" IG (1/4" tempered exterior, 5/8" air space, 1/4" tempered, 5/8" air space, 1/4" tempered interior)
Specimen Area	4.01 m <sup>2</sup>
Technician	Daniel P. Platts

## Airborne Sound Transmission Loss



**Intertek**



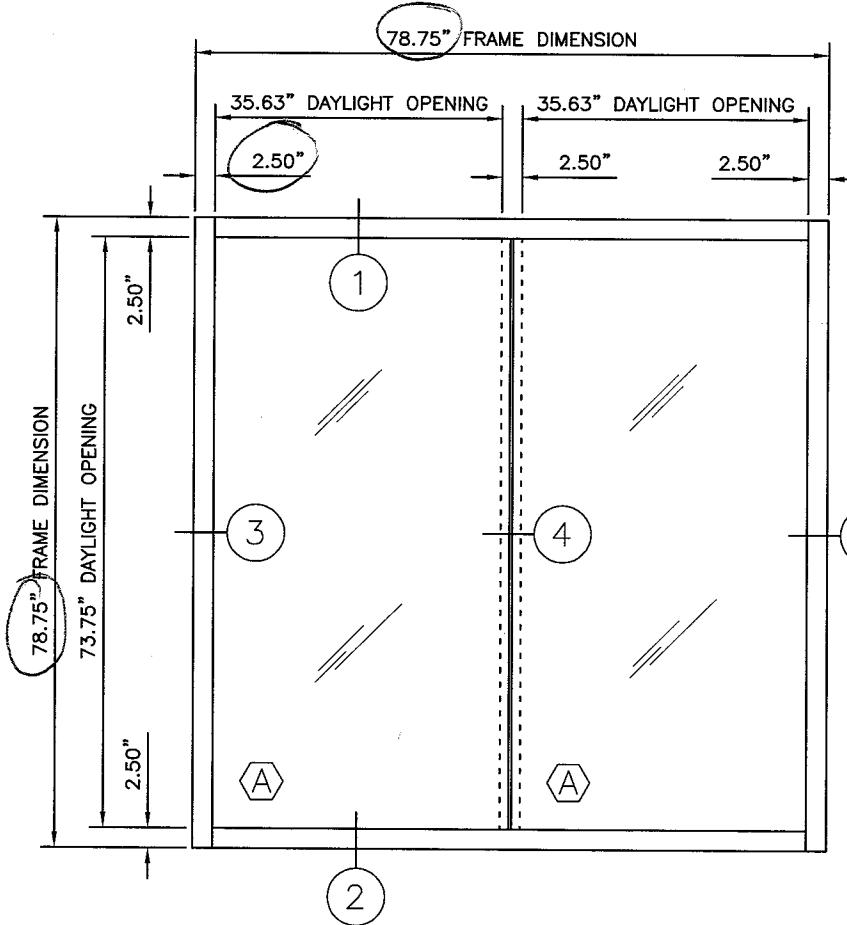
E0675.01-113-11

## **Appendix C**

### **Design Drawings**

MU2014-154-01

NOTE:  
1. MAINTENANCE JOB: PTC386306



Architectural Testing

Test sample complies with these details.  
Deviations are noted.

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Date 01/03/15 Tech ZPG

SYMBOL KEY		
SYMBOL	DESCRIPTION	QTY.
(A)	2" INSULATED GLASS 37.186 X 74.750 .250 PPG SOLARBAN 70XL, CLEAR LOW-E #2 SURFACE .625 MILL ALUM SPACER, AIR, SILICONE .250 PPG SOLARBAN 70XL, CLEAR LOW-E #4 SURFACE .625 MILL ALUM SPACER, AIR, SILICONE .250 CLR, TEMPERED	2

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REV.	DESCRIPTION	DATE	BY	SCALE: $\frac{3}{4}$ " = 1'-0"	DRAWN BY: <b>CHK</b>	TITLE: NFRC FRAMING PRODUCT VALIDATION ELEVATION	DRAWING NO. MU2014-154-01
					DATE: 06.03.14	PRODUCT: HP3253/HP3253SG SERIES CURTAIN WALL	Sheet No. 1 of 3 Sheets



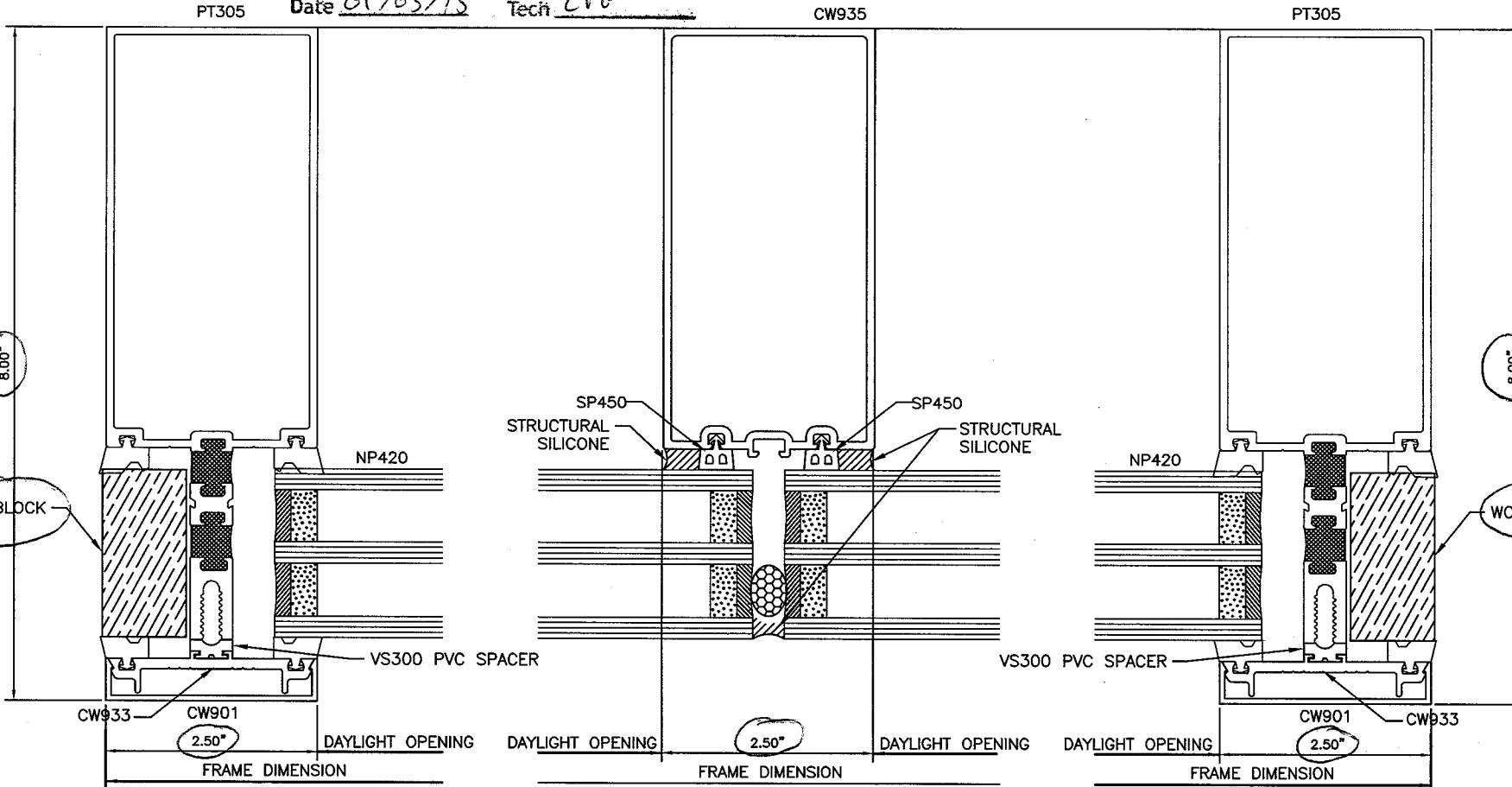
Architectural Testing

Test sample complies with these details.  
Deviations are noted.

MU2014-154-01

Report# E0675,01-113-11

Date 01/03/15 Tech ZP6



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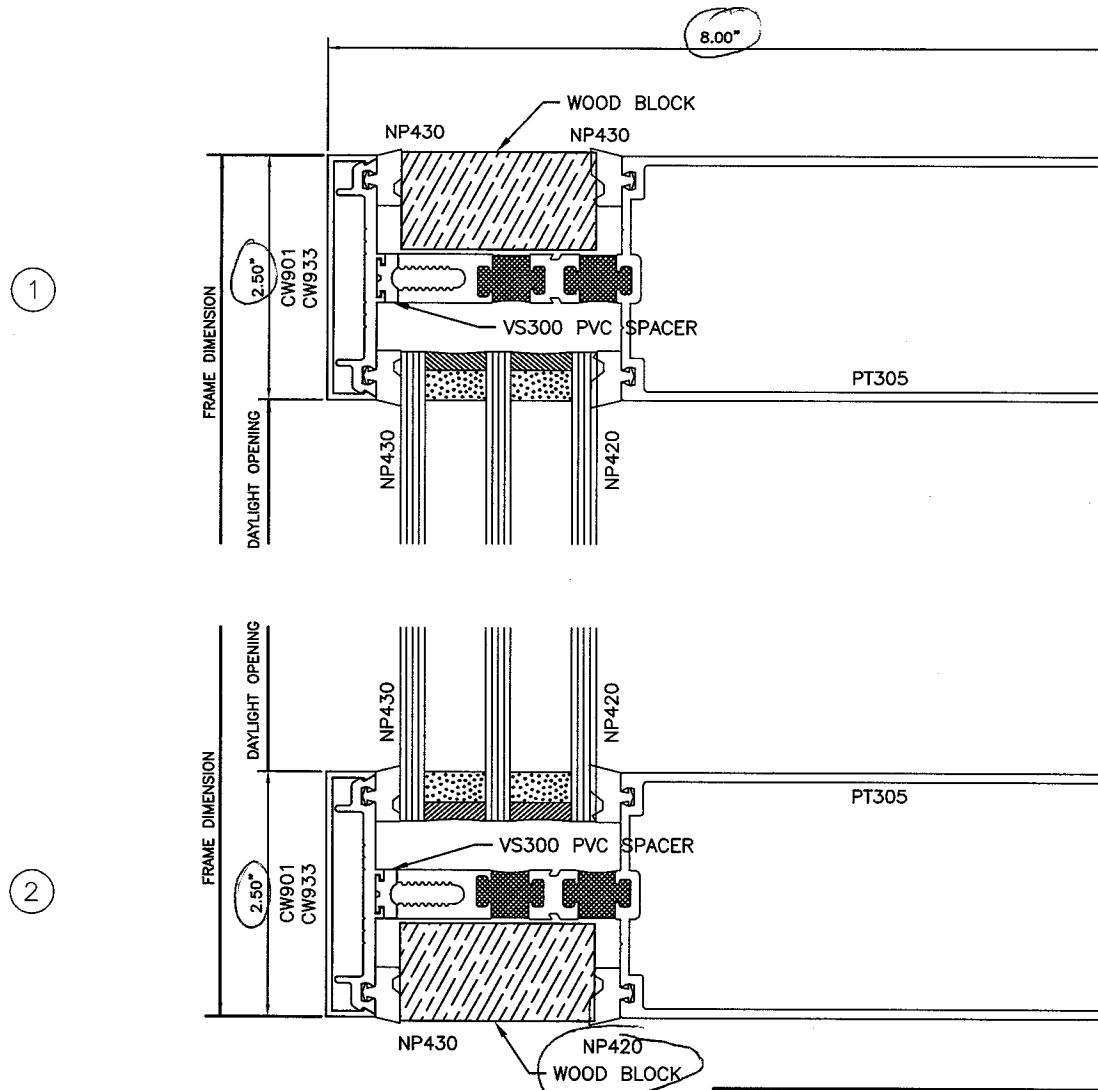
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REV.	DESCRIPTION	DATE	BY	SCALE: FULL				
								Sheet No. 3 of 3 Sheets

**CRL**  
ALUMINUM

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



Test sample complies with these details.  
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Report# E0675,01-113-11

Date 01/03/15 Tech ZP6

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REV.	DESCRIPTION	DATE	BY	DRAWN BY: GHK	DATE: 06.03.14	NFRC FRAMING PRODUCT VALIDATION HORIZONTAL SECTION	
				SCALE: FULL		PRODUCT: HP3253/HP3253SG SERIES CURTAIN WALL	DRAWING NO. MU2014-154-01

Sheet No. 2 of 3 Sheets

**Appendix D****Photographs****Receive Room View of Installed Specimen****Source Room View of Installed Specimen**