ASTM E 90 SOUND TRANSMISSION LOSS
TEST REPORT

Rendered to:

C.R. LAURENCE CO., INC.

SERIES/MODEL: 8200

TYPE: Horizontal Sliding Window

Summary of Test Results			
Data File No.	**Glazing (Nominal Dimensions)**	**STC**	**OITC**
E2738.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	32	26

Reference should be made to Architectural Testing, Inc. Report No. E2738.01-113-11 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:	E2738.01-113-11
Test Date:	12/30/14
Report Date:	01/30/15

Test Sample Identification:

Series/Model: 8200

Type: Horizontal Sliding Window

Overall Size: 59" by 47-1/4"

Glazing (Nominal Dimensions): 1" IG (1/4" Tempered, 1/2" Air Space, 1/4" Tempered)

Project Scope: Architectural Testing, Inc. was contracted by C.R. Laurence Co., Inc. to conduct a sound transmission loss test on a Series/Model 8200, Horizontal sliding window. 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: A double stud filler wall was constructed with 2-1/2" steel studs and 3-1/2" steel studs spaced 24" on center. Five layers of 5/8" Type "X" gypsum board were fastened to the receive side of the filler wall. Three layers of 1/2" cement board were fastened to the source side of the filler wall. The cavity was filled with two layers of R-13 fiberglass insulation. The perimeter and seams were sealed with acoustical sealant. A sound transmission loss test was then conducted on the filler wall. The filler wall achieved an STC rating of 71. The 60-1/2" by 48-1/2" filler wall plug was removed.

A filler wall-reducing element was built to adjust the test opening size to accommodate the test specimen. The reducing element consisted of a double 2x4 wood stud wall construction with three layers of 5/8" drywall on both sides. The stud cavities in the wall were insulated with two layers of R-13 fiberglass insulation. The window system was placed on isolation pads 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 test specimen, 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. The vent was opened and closed at least five times prior to testing.

Sample Descriptions:

Frame Construction:

		Frame
Size		59" by 47-1/4"
Thickness		4-1/2"
Corners		Coped
	Fasteners	Screws
	Seal Method	Sealant
Material		Aluminum
	Reinforcement	N/A
	Thermal Break Material	Urethane
Daylight Opening Size		25-3/8" by 38"

N/A-Non Applicable

Sample Descriptions: (Continued)

Panel Construction:

		Active Panel
Size		30-1/4" by 42-3/4"
Thickness		1-7/8"
Corners		Coped
	Fasteners	Screws
	Seal Method	Sealant
Material		Aluminum
	Reinforcement	N/A
	Thermal Break Material	Urethane
Daylight Opening Size		25-3/8" by 38"

Glazing:

Measured Overall Insulation Glass Unit Thickness	0.940"
Spacer Type	Aluminum

	Exterior Sheet	Gap	Interior Sheet
Measured Thickness	0.222"	0.498"	0.220"
Muntin Pattern	N/A	N/A	N/A
Material	Tempered	Air*	Tempered
Laminate Material	N/A	N/A	N/A

Glazing Method	Interior
Glazing Material	Flexible wedge gasket
Glazing Bead Material	Aluminum

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

Sample Descriptions: (Continued)

Components:

TYPE	QUANTITY	LOCATION
Weatherstrip		
0.270" by 0.270" Polypile with triple fin	1 Row	Perimeter of frame and meeting rail
Hardware		
Roller wheel assembly set	1	Bottom rail
Spring loaded latch	1	Lock stile
Keeper	1	Keeper stile
Weep cover	2	Sill face
Handle bar	2	Lock rail and stile
Drainage		
1-3/4" by 1/4" Weep slot	2	Sill face
2" by 1/2" Weep slot	2	Sill track

Comments: The total weight of the sample was 158 lbs. The design drawings (included in Appendix C) supplied by the client, accurately describe the Series/Model 8200, Horizontal sliding window. The dimensions on the drawings that are circled and/or checked were verified against the test specimen. The window 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 8200, Horizontal sliding window is listed below.

Summary of Test Results			
Data File No.	**Glazing (Nominal Dimensions)**	**STC**	**OITC**
E2738.01	1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)	32	26

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:

Digitally Signed by: Zachary Golden

Zachary Golden
Technician - Acoustical Testing

Digitally Signed by: Todd D. Kister

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 (6)
- Appendix-D: Photographs (1)

Revision Log

Rev. #	Date	Page(s)	Revision(s)
0	01/30/15	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	PCB Piezotronics	378B20	Microphone and Preamplifier	64902	12/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64903	12/14
Source Room Microphone	PCB Electronics	378B20	Microphone and Preamplifier	65103	05/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64905	12/14
Source Room Microphone	PCB Piezotronics	378B20	Microphone and Preamplifier	64906	12/14
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^3 (8291.3 ft^3)	Rotating vane and stationary diffusers Temperature and humidity controlled Isolation pads under the floor
Source Room	206.6 m^3 (7296.3 ft^3)	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	12/30/14					
Data File No.	E2738.01					
Client	C.R. Laurence Co., Inc.					
Description	Series/Model: 8200, Horizontal sliding window with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)					
Specimen Area	1.80 m²	Receive Temp.	23.6 °C		Source Temp.	24.0 °C
Technician	Zach Golden	Receive Humidity	51%		Source Humidity	50%

Freq (Hz)	Background SPL (dB)	Absorption (m²)	Source SPL (dB)	Receive SPL (dB)	Specimen TL (dB)	95% Confidence Limit	Number of Deficiencies
80	34.4	3.7	108	81	24.4	4.49	-
100	32.7	4.8	108	80	24.0	1.70	-
125	34.9	5.0	107	87	15.2	1.64	1
160	39.6	4.7	107	82	20.4	0.74	0
200	38.4	4.7	107	82	21.5	0.69	1
250	32.4	5.2	108	79	24.5	0.77	0
315	26.7	6.2	103	74	23.4	0.47	5
400	24.4	6.6	102	71	25.0	0.44	6
500	21.9	6.5	102	67	29.4	0.48	3
630	18.0	6.4	103	66	31.9	0.25	1
800	14.9	6.6	103	64	32.9	0.31	1
1000	10.7	6.6	102	61	34.7	0.25	0
1250	9.3	7.3	100	58	35.9	0.26	0
1600	6.9	7.7	103	61	35.9	0.21	0
2000	5.8	8.0	101	62	32.3	0.25	4
2500	5.2	8.9	100	60	33.0	0.16	3
3150	5.1	10.4	100	59	33.7	0.14	2
4000	5.4	12.3	99	55	35.6	0.17	0
5000	5.9	15.2	98	51	37.1	0.29	-

STC Rating	**32**	*(Sound Transmission Class)*
Deficiencies	27	*(Sum of Deficiencies)*
OITC Rating	**26**	*(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

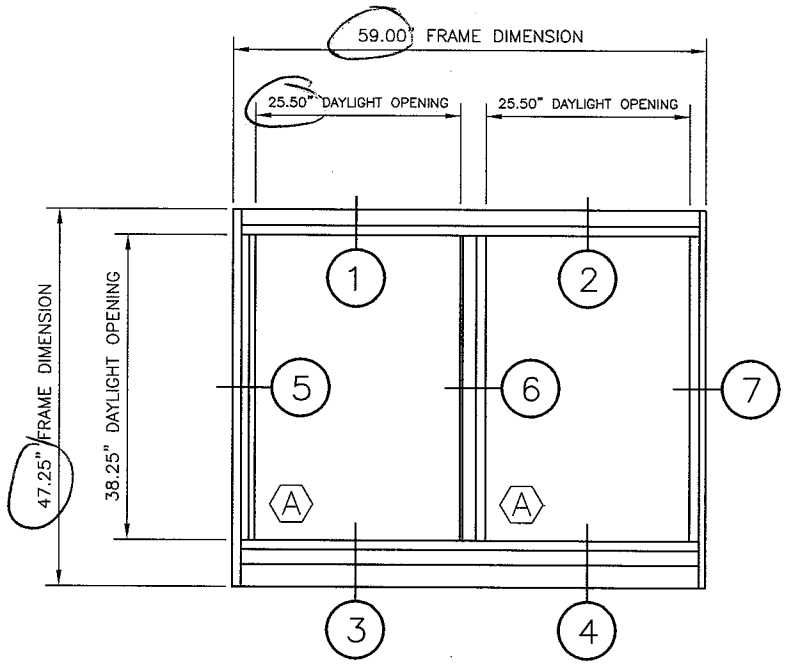
ASTM E 90

Test Date	12/30/14						
Data File No.	E2738.01						
Client	C.R. Laurence Co., Inc.						
Description	Series/Model: 8200, Horizontal sliding window with 1" IG (1/4" tempered, 1/2" air space, 1/4" tempered)						
Specimen Area	1.80 m²	Receive Temp.	23.6 °C		Source Temp.	24.0 °C	
Technician	Zach Golden	Receive Humidity	51%		Source Humidity	50%	

Appendix C

Design Drawings

MU2014-178-02



Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# F2738.01-113-11

Date 1/27/15 Tech ZPL

SYMBOL KEY		
SYMBOL	DESCRIPTION	QTY.
A	1" INSULATED GLASS 27.500 X 40.250 .250 CLR, TEMPERED .500 MILL ALUM SPACER, AIR .250 PPG SOLARBAN 70XL, LOW-E #3 SURFACE, SILICONE	2

REV.	DESCRIPTION	DATE	BY

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2100 E. 38TH STREET
LOS ANGELES, CA 90058

DRAWN BY: GHK
DATE: 06.27.14
SCALE: 3/4"=1'-0"

TITLE:
SOUND TRANSMISSION LOSS TEST
ELEVATION
PRODUCT: 8200 HORIZONTAL SLINDING WINDOW

DRAWING NO.
MU2014-178-02

Sheet No. 1 of 6 Sheets

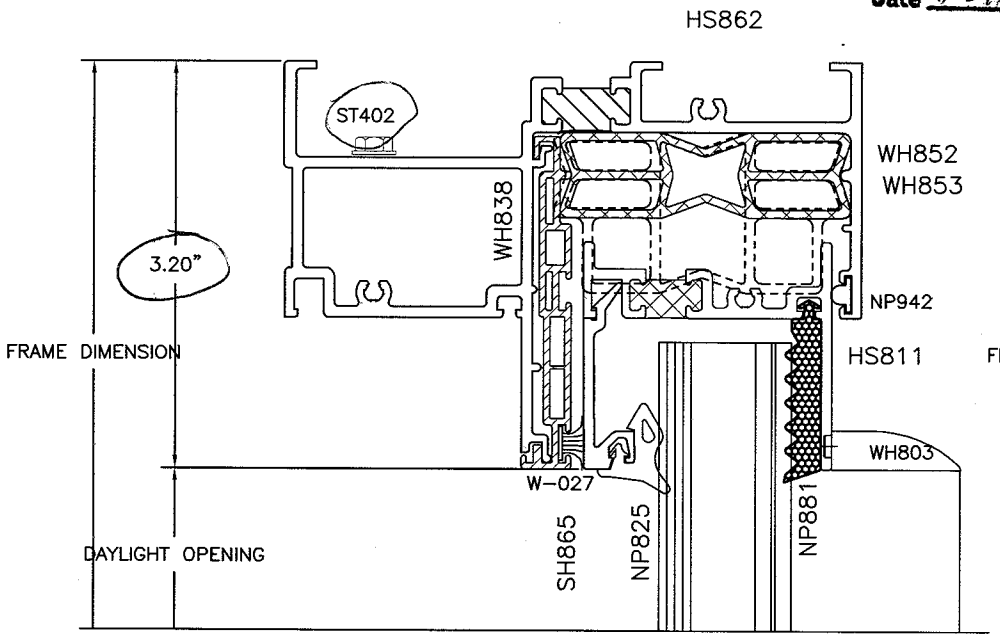
Architectural Testing

MU2014-178-02

Test sample complies with these details.
Deviations are noted.

Report# E2738.01-113-11

Date 1/27/15 Tech ZPL



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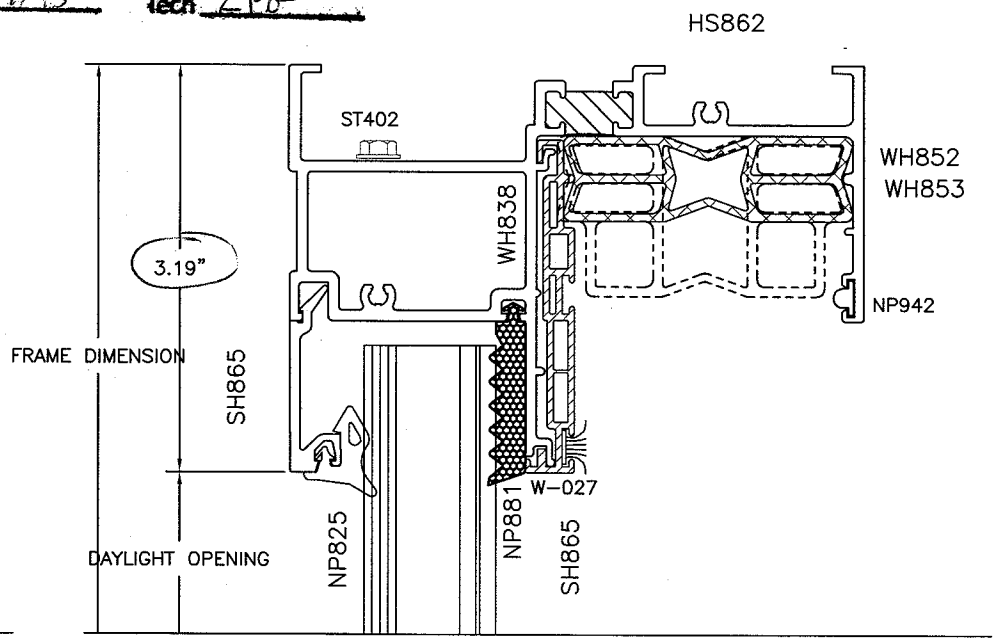

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DRAWN BY: GHK
DATE: 06.27.14
SCALE: FULL

TITLE:
SOUND TRANSMISSION LOSS TEST
HORIZONTAL SECTION
PRODUCT: 8200 HORIZONTAL SLINDING WINDOW

DRAWING NO.
MU2014-178-02

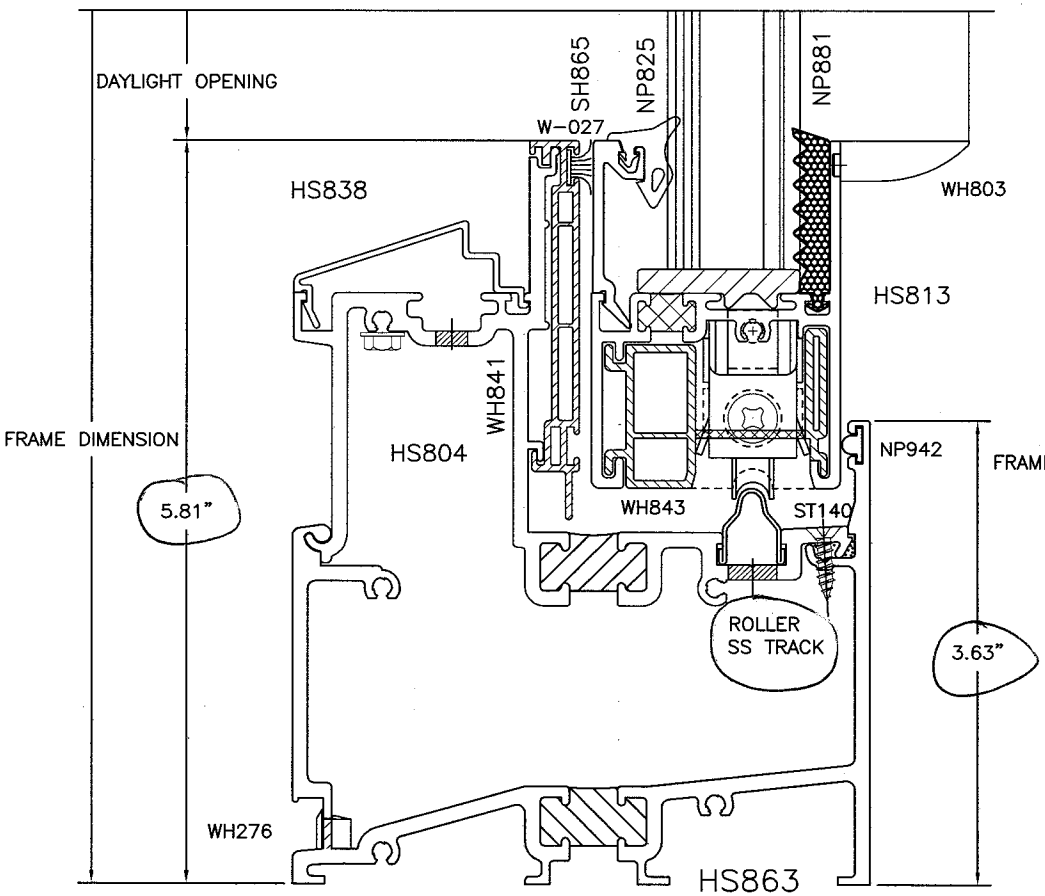
Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2738.01-113-11

Date 1/27/15 Tech ZPG

MU2014-178-02



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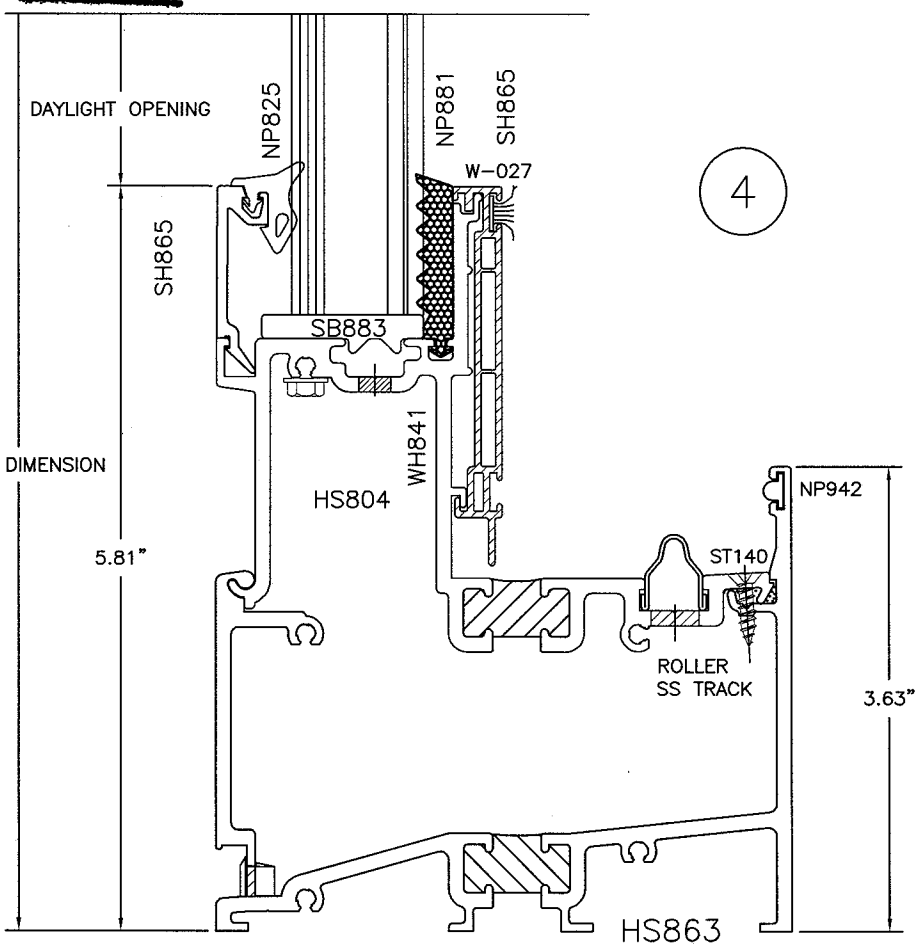

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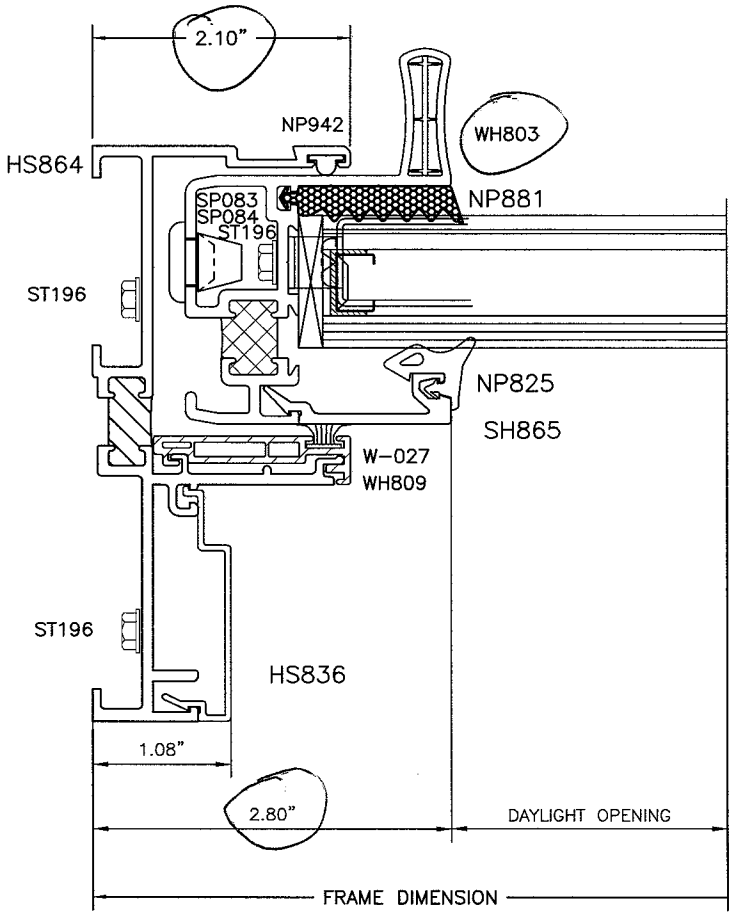
DATE: 06.27.14
SCALE: FULL

TITLE:
SOUND TRANSMISSION LOSS TEST
VERTICAL SECTION
PRODUCT: 8200 HORIZONTAL SLINDING WINDOW

DRAWING NO.
MU2014-178-02

Sheet No. 3 of 6 Sheets

MU2014-178-02



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DRAWN BY: GHK

DATE: 06.27.14

SCALE: $\frac{3}{4}$"=1'-0"

TITLE:
SOUND TRANSMISSION LOSS TEST ELEVATION
PRODUCT: 8200 HORIZONTAL SLINDING WINDOW

DRAWING NO.
MU2014-178-02

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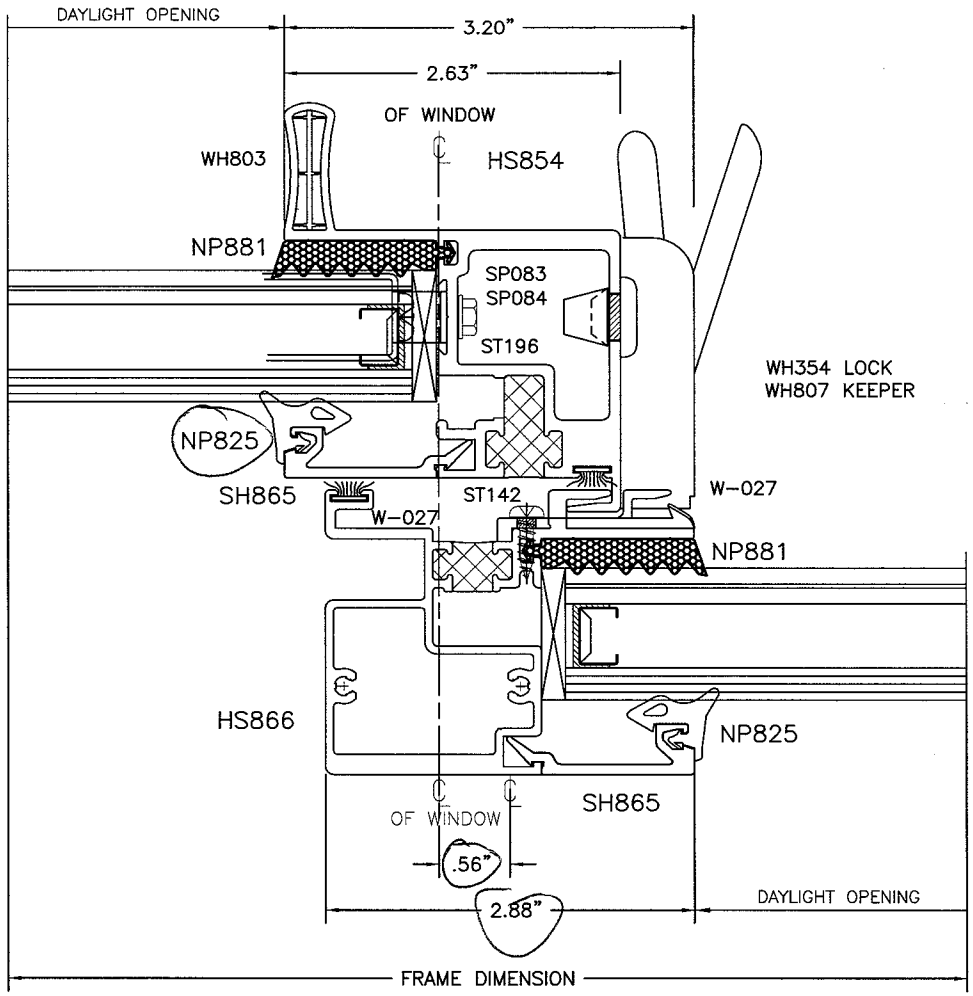

6

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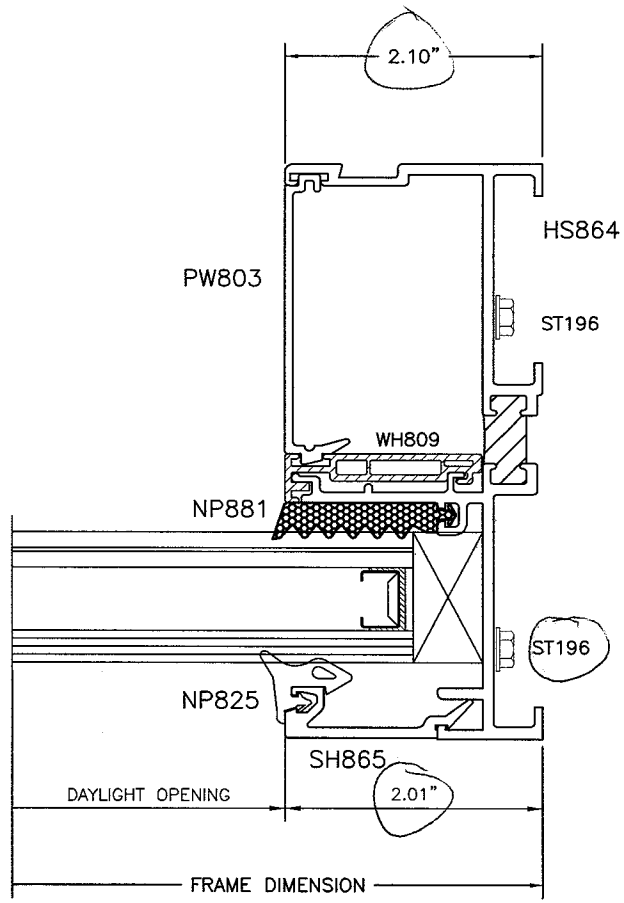
DATE: 06.27.14
SCALE: FULL

TITLE: SOUND TRANSMISSION LOSS TEST
HORIZONTAL SECTION
PRODUCT: 8200 HORIZONTAL SLINDING WINDOW

DRAWING NO. MU2014-178-02

Sheet No. 5 of 6 Sheets

MU2014-178-02



7

Architectural Testing

Test sample complies with these details.
Deviations are noted.

Report# E2738.01-113-11

Date 1/27/15 Tech ZP6

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SCALE: FULL

TITLE: SOUND TRANSMISSION LOSS TEST
VERTICAL SECTION
PRODUCT: 8200 HORIZONTAL SLINDING WINDOW

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

DRAWING NO. MU2014-178-02

Sheet No. 6 of 6 Sheets

Appendix D

Photographs

Receive Room View of Installed Specimen

Source Room View of Installed Specimen