



# Acoustical Surfaces, Inc.

SOUNDPROOFING, ACOUSTICS, NOISE & VIBRATION CONTROL SPECIALISTS

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**We Identify and S.T.O.P. Your Noise Problem**

## RIVERBANK ACOUSTICAL LABORATORIES

1512 S. BATAVIA AVENUE  
GENEVA, ILLINOIS 60134

Alion Science and Technology

630/232-0104  
FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

### TEST REPORT

FOR: Rendered by Manufacturer and Released to:  
Acoustical Surfaces, Inc.  
123 Columbia Court North  
Chaska, MN 55318

Sound Transmission Loss Test  
RAL™-TL07-170

Page 1 of 4

ON: System (9) Staggered 2 x 4 WS Wall, 16" on Center, 3.5  
Fiberglass Both Sides, One Side 5/8" Gold Bond®  
BRAND Fire-Shield® Gypsum Board, Other Side 5/8"  
Gold Bond® BRAND Fire-Shield® Gypsum Board and  
5/8" Gold Bond® BRAND SoundBreak™ Gypsum  
Board

CONDUCTED: 28 June 2007

#### TEST METHOD

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E90-04 and E413-04, as well as other pertinent standards. Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP) for this test procedure (NVLAP Lab Code: 100227-0). A description of the measuring technique is available separately.

#### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the client as System (9) staggered 2 x 4 WS wall, 16" on center, 3.5 fiberglass both sides, one side 5/8" Gold Bond® BRAND Fire-Shield® Gypsum Board, other side 5/8" Gold Bond® BRAND Fire-Shield® Gypsum Board and 5/8" Gold Bond® BRAND SoundBreak™ Gypsum Board. The overall dimensions of the specimen as measured were nominally 4.27 m (168 in.) wide by 2.74 m (108 in.) high and 187 mm (7.375 in.) thick. The specimen was installed by the manufacturer directly into the laboratory's 2.74 m (9 ft) by 4.27 m (14 ft) wood-lined steel frame and was sealed on the periphery (both sides) with a dense mastic.

The description of the specimen was as follows: The specimen consisted of a staggered two-by-four wood stud wall on two-by-six wood top and bottom plates with a layer of R-13 fiberglass batt insulation in each cavity. One side of the wall was covered with a single layer of 5/8" Fire-Shield® Gypsum Board. The other side of the wall was covered with a base layer of 5/8" Fire-Shield® Gypsum Board and a face layer of 5/8" SoundBreak™ Gypsum Board.

Floor Ceiling Plates and Vertical Framing: The wall had two 140 mm (5.5 in.) wide by 38 mm (1.5 in.) thick and 4.27 m (168 in.) long SPF wood plates. Vertical framing supports consisted of

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RAL™-TL07-170

28 June 2007

Page 2 of 4

38 mm (1.5 in.) split SPF wood. Plates and vertical framing were attached to the top and bottom of the test frame with 16d nails on 610 mm (24 in.) centers. The total weight of the framing was 29.3 kg (64.5 lbs).

Studs: Twenty (20) pieces of SPF wood 2 x 4's, actual 38 mm (1.5 in.) by 89 mm (3.5 in.) were cut to nominal 2.67 m (105 in.) long. Each row of ten (10) studs was spaced on nominal 406 mm (16 in.) centers attached to the two-by-six wood plates using 8d nails. The second row of studs was staggered from the first row with an offset of 8 inches. The total weight of the studs was 83.9 kg (185 lbs).

Insulation: All cavities formed by the plates and studs were lined with Kraft faced R-13 fiberglass insulation measuring 89 mm (3.5 in.) thick and 406 mm (16 in.) wide by 1.22 m (48 in.) high. The total weight of the insulation was 27.2 kg (60 lbs).

Gypsum Wallboard: On the receive side, a single layer of 16 mm (0.625 in.) thick Fire-Shield® Gypsum Board was applied vertically and fastened with 32 mm (1.25 in.) long Type S bugle head drywall screws on 305 mm (12 in.) centers. On the source side, a base layer of 16 mm (0.625 in.) thick Fire-Shield® Gypsum Board was applied vertically and fastened with 32 mm (1.25 in.) long Type S bugle head drywall screws on 305 mm (12 in.) centers and a face layer of 16 mm (0.625 in.) SoundBreak™ Gypsum Board was applied vertically and fastened with 51 mm (2 in.) long Type S bugle head drywall screws on 406 mm (16 in.) centers. Total weight of the Fire-Shield® Gypsum Board as measured was 259 kg (570 lbs.). Total weight of the SoundBreak™ Gypsum Board as measured was 152 kg (334 lbs.). Joints were staggered on opposite sides and each layer. Exposed joints were covered with duct tape. Screw heads remained exposed.

The weight of the specimen as measured was 552 kg (1,216.25 lbs.), an average of 47.1 kg/m<sup>2</sup> (9.7 lbs/ft<sup>2</sup>). The transmission area used in the calculations was 11.7 m<sup>2</sup> (126 ft<sup>2</sup>). The source and receiving room temperatures at the time of the test were 26±1°C (78±1°F) and 44±1% relative humidity. The source and receive reverberation room volumes were 178 m<sup>3</sup> (6,298 ft<sup>3</sup>) and 177 m<sup>3</sup> (6,255 ft<sup>3</sup>), respectively.

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## TEST REPORT

RAL™-TL07-170

28 June 2007

Page 3 of 4

### TEST RESULTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. A graphic presentation of the data and additional information appear on the following pages. The precision of the TL test data is within the limits set by the ASTM Standard E90-04.

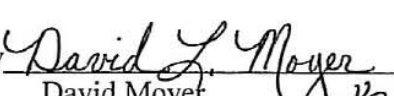
<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>	<u>FREQ.</u>	<u>T.L.</u>	<u>C.L.</u>	<u>DEF.</u>
100	32	1.18		800	61	0.24	1
125	39	0.40	5	1000	62	0.10	1
160	39	0.60	8	1250	65	0.14	
200	45	0.45	5	1600	67	0.12	
250	51	0.53	2	2000	64	0.09	
315	56	0.30		2500	65	0.09	
400	58	0.27	1	3150	69	0.05	
500	59	0.23	1	4000	72	0.08	
630	60	0.15	1	5000	76	0.04	

STC=60


### ABBREVIATION INDEX

FREQ. = FREQUENCY, HERTZ, (cps)  
T.L. = TRANSMISSION LOSS, dB  
C.L. = UNCERTAINTY IN dB, FOR A 95% CONFIDENCE LIMIT  
DEF. = DEFICIENCIES, dB<STC CONTOUR (SUM OF DEF = 25)  
STC = SOUND TRANSMISSION CLASS

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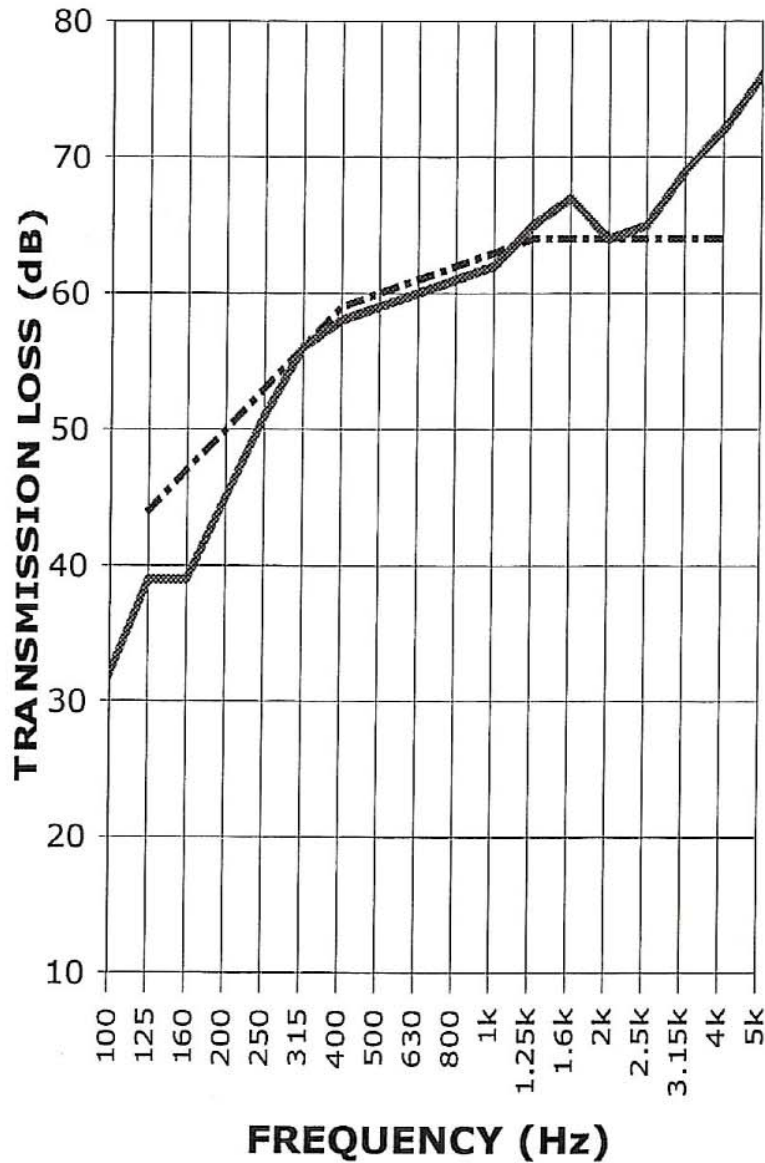
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## TEST REPORT

SOUND TRANSMISSION REPORT  
RAL - TL07-170

PAGE 4 OF 4



FREQUENCY (Hz)

STC = 60



TRANSMISSION LOSS

SOUND TRANSMISSION LOSS CONTOUR

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