

# RIVERBANK ACOUSTICAL LABORATORIES

1512 BATAVIA AVENUE  
GENEVA, ILLINOIS 60134

OF  
IIT RESEARCH INSTITUTE

708/232-0104  
FOUNDED 1918 BY  
WALLACE CLEMENT SABINE

## REPORT

FOR: Consolidated Systems, Inc.

Sound Absorption Test  
RAL™-A91-83

ON: Versa-Dek® 2.0 Acoustical Deck With Mesh Spacers  
& 2" Thick, 3.0 PCF Fiberglass On Dow 60 PSI  
Plaza Deck Roof Insulation

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CONDUCTED: 22 February 1991

### TEST METHOD

The test method conformed explicitly with the requirements of the ASTM Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method: ASTM C423-90a and E795-83. 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. A description of the measuring technique is available separately. The microphone used was a Bruel & Kjaer serial number 1330828.

### DESCRIPTION OF THE SPECIMEN

The test specimen was designated by the client as Versa-Dek® 2.0 Acoustical Deck with mesh spacers and 2" thick, 3.0 pcf fiberglass on Dow 60 PSI Plaza Deck roof insulation. The overall dimensions of the specimen as measured were 2.44 m (96 in.) wide by 2.74 m (108 in.) long and 12.1 cm (4.75 in.) thick. The specimen consisted of five deck units. Four of the units were nominally 61.0 cm (24 in.) wide. One unit was nominally 30.5 cm (12 in.) wide. The specimen was tested in the laboratory's 292 m<sup>3</sup> (10,311 ft<sup>3</sup>) test chamber. The client's description of the specimen was as follows: The sample consisted of five interlocking, perforated, 20 gauge formed metal roof decks with wire mesh spacers and fiberglass insulation set on a styrofoam insulation board. The formed surfaces of the deck were perforated with 4 mm (0.156 in.) diameter holes for a 16% open area. The cavities of the formed surfaces were filled with 12.1 cm (4.75 in.) wide by 5.1 cm (2 in.) thick, 3.0 pcf density fiberglass. A strip of 10.8 cm (4.25 in.) wide wire mesh was placed between the fiberglass and the formed deck. The entire assembly was set on a layer of 7.6 cm (3 in.) thick extruded polystyrene insulation, designated as Dow 60 PSI Plaza Deck roof insulation. A visual inspection verified the client's description of the specimen. The weight of the entire specimen as measured was 125 kg (275 lbs) an average of 18.7 kg/m<sup>2</sup> (3.8 lbs/ft<sup>2</sup>). The area used in the calculations was 6.7 m<sup>2</sup> (72 ft<sup>2</sup>). The room temperature at the time of the test was 19°C (67°F) and 60% relative humidity.

### MOUNTING A

The test specimen was laid directly against the test surface.

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### TEST RESULTS

1/3 Octave Center Center Frequency (Hz)	Absorption Coefficient	Total Absorption In Sabins	% Of Uncertainty With 95% Confidence Limit
100	0.17	12.10	0.86
** 125	0.18	13.11	0.78
160	0.24	17.17	0.83
200	0.42	29.91	0.82
** 250	0.60	43.47	0.58
315	0.80	57.31	0.63
400	0.98	70.72	0.58
** 500	1.10	79.18	0.62
630	1.13	81.26	0.63
800	1.10	79.36	0.59
** 1000	1.09	78.72	0.56
1250	0.97	69.91	0.62
1600	0.91	65.23	0.60
** 2000	0.93	66.89	0.60
2500	0.92	66.21	0.65
3150	0.85	60.96	0.60
** 4000	0.81	58.36	0.46
5000	0.77	55.30	0.64

NRC = .95

THE RESULTS REPORTED ABOVE APPLY ONLY TO THE SPECIFIC SAMPLE SUBMITTED FOR MEASUREMENT. NO RESPONSIBILITY IS ASSUMED FOR PERFORMANCE OF ANY OTHER SPECIMEN.  
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### TEST RESULTS

The percentage of uncertainty for the required 95% confidence limits indicated above must fall within the prescribed limits designated in par. 13.2 of ASTM C423-90a. It states that for the absorption of the reverberation room containing the specimen the testing laboratory shall obtain data with less than 4% uncertainty at 125 (hertz) and 2% uncertainty at 250, 500, 1000, 2000, and 4000 (hertz). The method of calculation is described in ASTM STP 15D and outlined in section 13 of the standard.

The noise reduction coefficient (NRC) is the average of the coefficients at 250, 500, 1000, and 2000 Hz, expressed to the nearest integral multiple of 0.05.

Submitted by

Peter E. Straus  
Peter E. Straus  
Senior Technician

Reviewed by

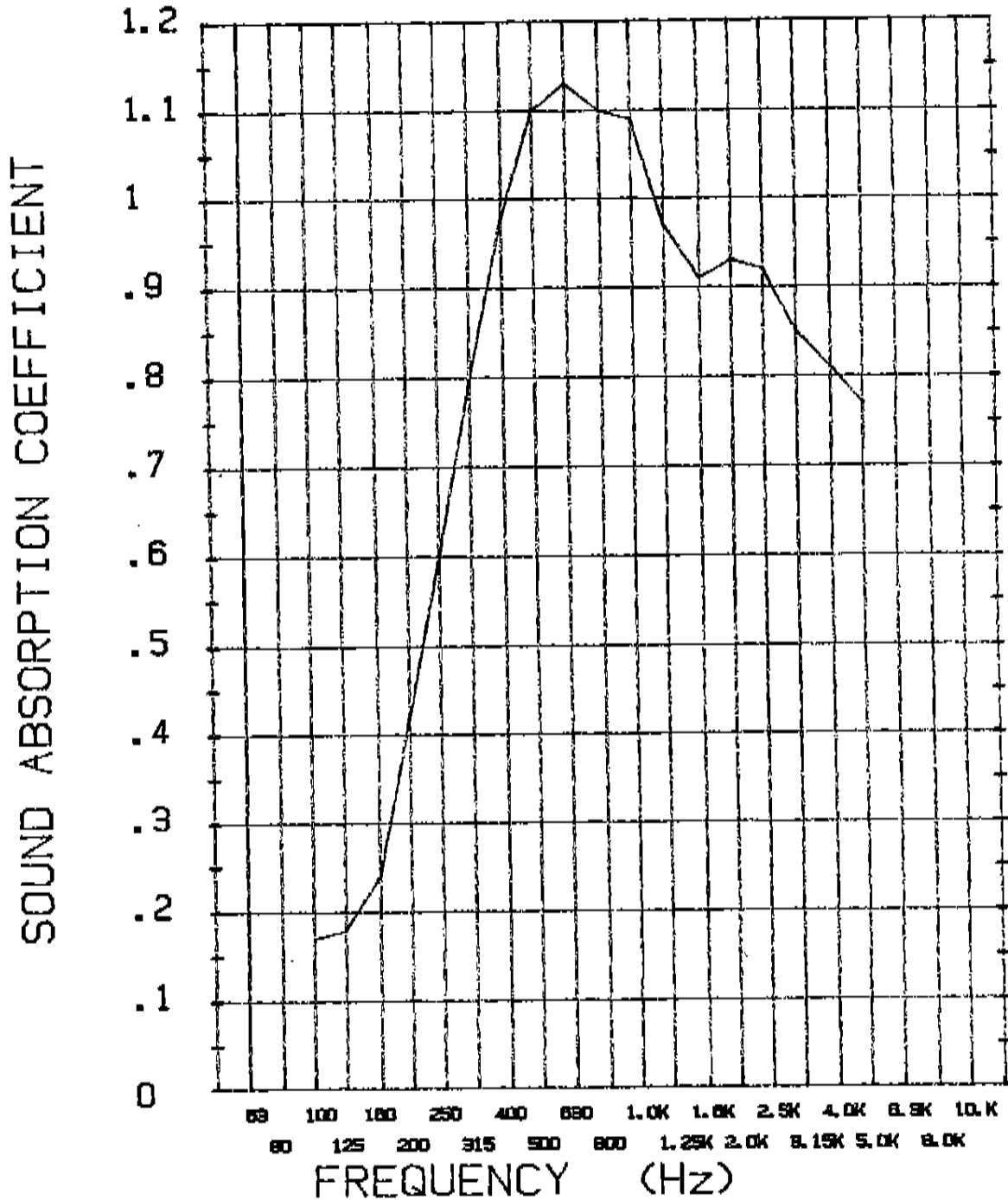
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### SOUND ABSORPTION REPORT

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N R C = . 95

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