RIVERBANK ACOUSTICAL LABORATORIES
OF
IIT RESEARCH INSTITUTE
1512 BATAVIA AVENUE
GENEVA, ILLINOIS 60134
708/232-0104
FOUNDED 1918 BY
WALLACE CLEMENT SABINE

REPORT

FOR: Consolidated Systems, Inc.

Sound Absorption Test
RAL™-A91-84

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

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 2" thick rigid fiberglass 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 9.5 cm (3.75 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^3 (10,311 ft^3) 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 rigid fiberglass roof insulation. 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 5.1 cm (2 in.) thick rigid fiberglass board. A visual inspection verified the client's description of the specimen. The weight of the entire specimen as measured was 135 kg (297 lbs) an average of 20.1 kg/m^2 (4.1 lbs/ft^2). The area used in the calculations was 6.7 m^2 (72 ft^2). 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	0.44	31.61	0.69
**	125	0.82	59.34	0.40
	160	0.90	64.45	0.57
	200	1.04	75.07	0.48
**	250	1.32	95.20	0.44
	315	1.33	95.87	0.36
	400	1.31	94.48	0.41
**	500	1.24	89.13	0.52
	630	1.21	87.16	0.57
	800	1.18	85.17	0.58
**	1000	1.12	80.41	0.59
	1250	0.99	71.39	0.60
	1600	0.97	70.19	0.60
**	2000	0.94	67.71	0.60
	2500	0.90	64.91	0.68
	3150	0.85	61.06	0.52
**	4000	0.81	58.59	0.57
	5000	0.77	55.76	0.61

NRC = 1.15

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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 _____
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SOUND ABSORPTION REPORT
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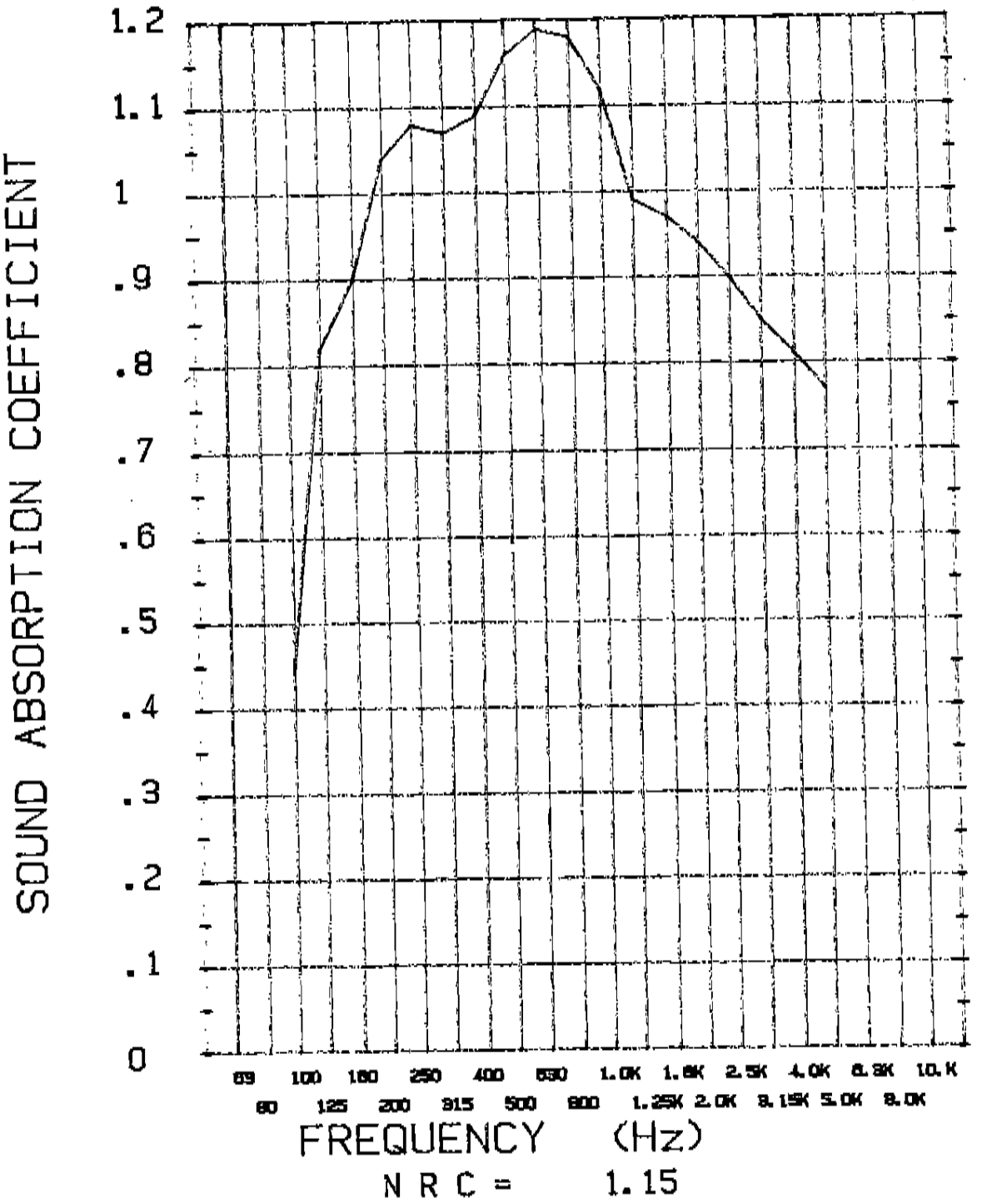

NRC = 1.15