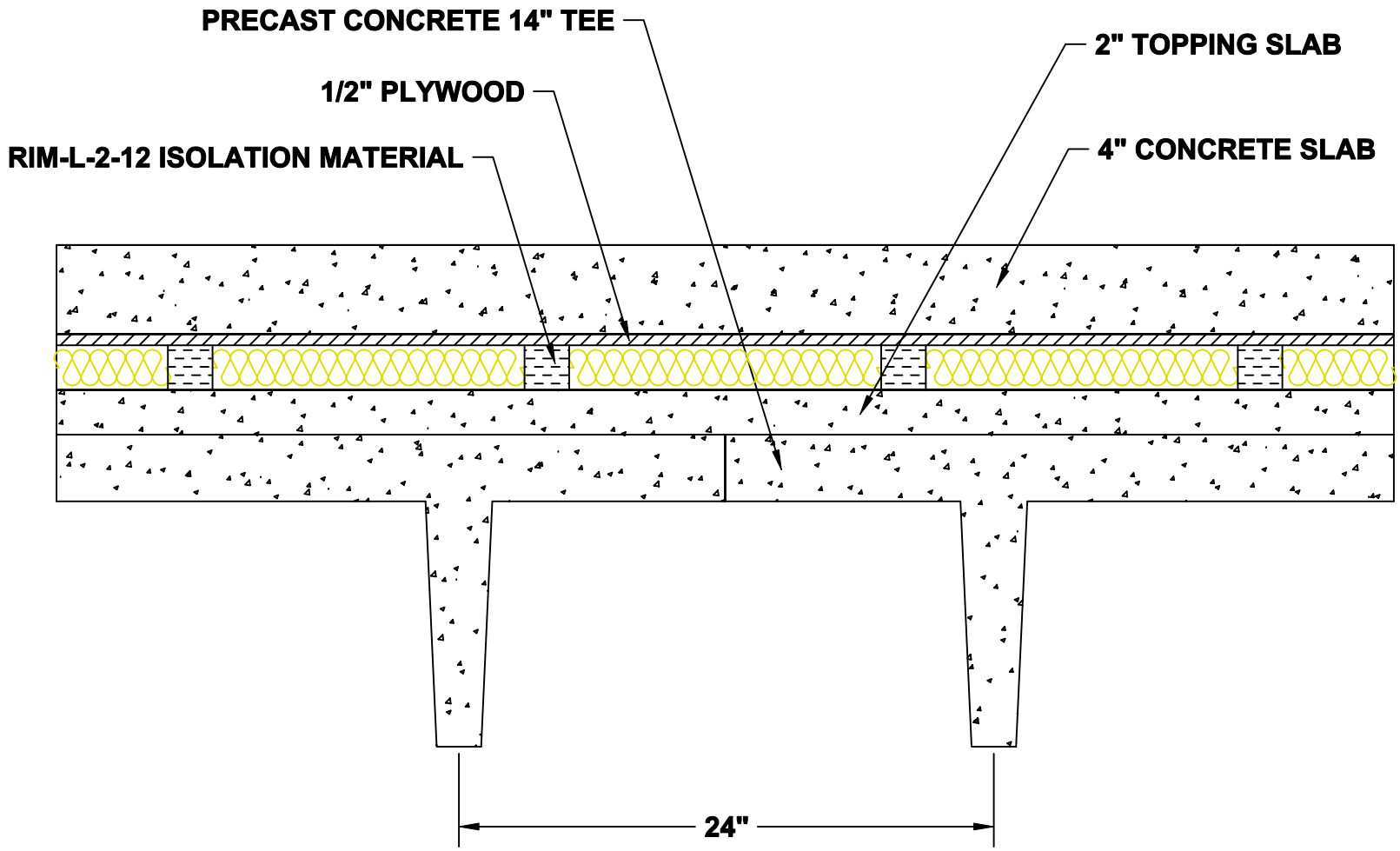
STC 73



STRUCTURAL
FLOOR AVERAGE
CONCRETE WT
75 PSF

KINETICS Noise Control	TITLE	LAST DATE REVISED	REVISED BY	DRAWING NO.
	TEST A2-b	11-08-04	JAE	A2-b

REPORT

FOR: Consolidated Kinetics Corporation

Sound Transmission Loss
Test TL 71-211

ON: Floor-Assembly, Shielded
4 Inches of Concrete on Kinetics
Floating System and 2 Inches of
Concrete Topping on 14 Inch Deep
"T" Sections.

CONDUCTED: 3 May 1971

INTRODUCTION

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the American Society for Testing and Materials Designations E 90-70 and E413-70T, as well as other pertinent standards.

DESCRIPTION OF THE SPECIMEN

The test specimen had "T" sections, 48 inches wide (cut to 24 inches wide for ease in handling), 238 inches long, placed edge to edge to form a floor 168 by 240 inches. The "T" sections contained joists spaced 24 inches o.c.. A 2 inch topping of 3000 psi concrete was poured over the entire assembly and finished. Prefabricated floating panels, 48 by 48 inches were joined with clips and laid over the entire surface to form a continuous floor. A double layer of polyethylene plastic was laid over the entire surface. A single layer of 3/4 inch thick wood fiber board was applied around the perimeter of the entire specimen. Wire mesh was laid in place and a 4 inch thick layer of 3000 psi concrete was poured over the entire surface and finished semi-smooth. Along the perimeter of the specimen and test opening wall, the wood fiber board was cut back and the void covered with a dense flexible mastic. The floating panels were constructed of 1/2 inch thick plywood, Kinetic Isolation Pads, Type L, spaced 12 inches o.c., and 2 inch thick glass fiber insulation, with a density of 1.3 pounds per cubic foot. The pads were 2 inch cubes cemented to the plywood. The "T" sections and the topping weighed an average of 75 pounds per sq ft and the 4 inch surface slab weighed an average of 50 pounds per sq ft. An additional building was built inside the laboratory's source room, directly over the floor being tested. The purpose of this building was to effectively eliminate transmission of sound by any other path than through the floor, and was necessitated by the relative equivalence of the specimen thickness and that of the

REPORT

Consolidated Kinetics Corporation

TL 71-211

3 May 1971

DESCRIPTION OF THE SPECIMEN (con't)

laboratory's walls. This additional building was constructed of dense concrete block, 6 inches thick and having three cores each. It was laid with full thickness mortar in a typical manner, and had inside dimensions of 138-1/2 inches width, 211-1/2 inches length, and 141-1/4 inches height. A small door was provided for an exit and was sealed during the measurement. Moving vanes were utilized for diffusing the sound field in both the source and receiving rooms. The ceiling for the additional building was constructed of a single thickness of 5/8 inch gypsum wallboard on both top and bottom of 2 by 6 inch wood joists. The area of the floor within this building as used in the computations was 203.4 square feet.

RESULTS OF MEASUREMENTS

Sound transmission loss values are tabulated at the eighteen standard frequencies. An explanation of the sound transmission class rating, a graphic presentation of the data, and additional information appear on the following pages.

FREQUENCY, Hertz (cps)	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000
TRANSMISSION LOSS, dB	57	52	52	58	64	72	74	78	85	85	90	95	95	96	100	est>100	est>100	est>100
DEFICIENCIES		5	8	5	2													

SOUND TRANSMISSION CLASS 73

Approved William Siekman
William Siekman
Manager

Submitted by D. A. Zedonis
D. A. Zedonis
Assistant Research Engineer

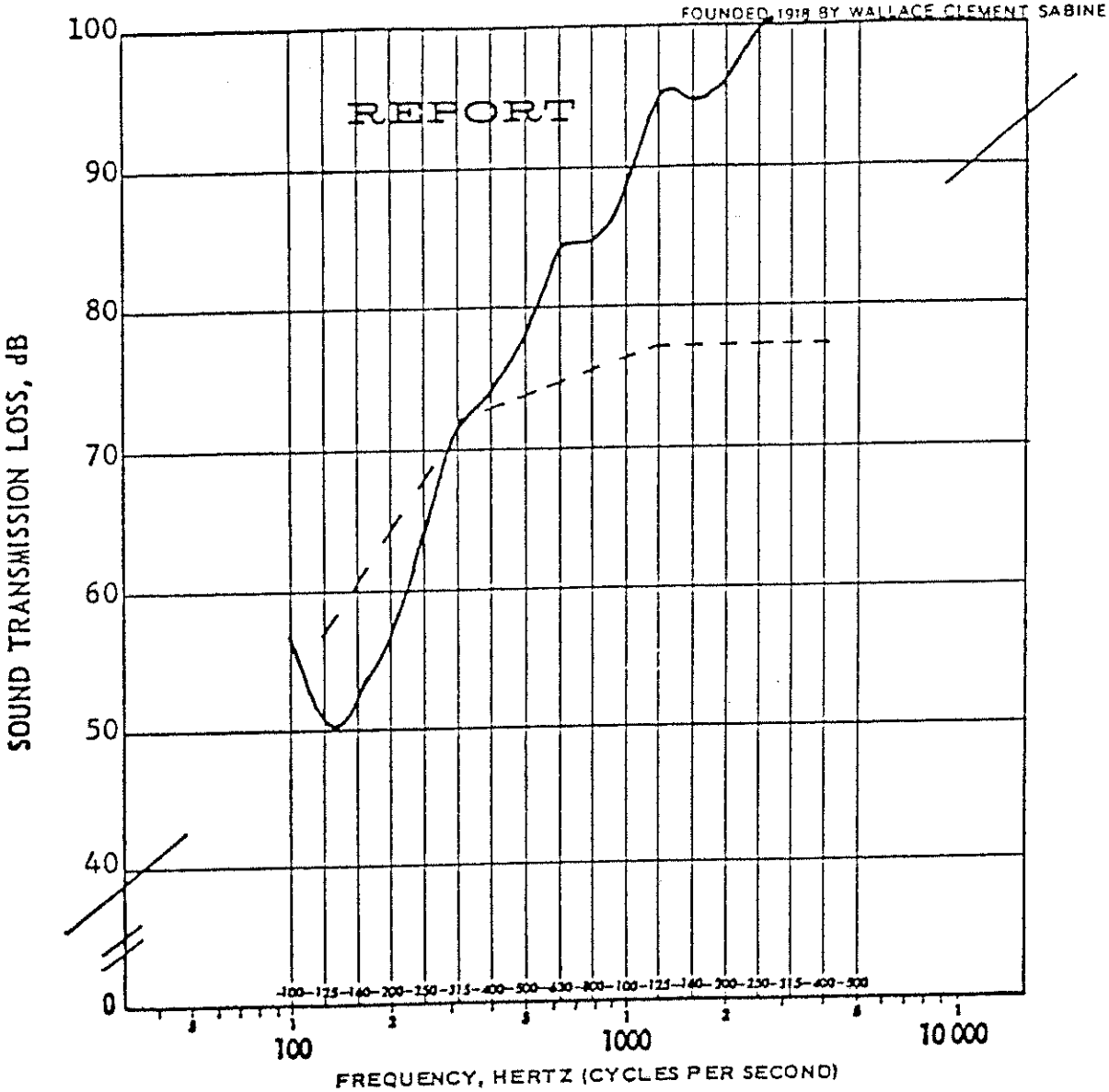
REPORT

The airborne sound transmission loss (TL) of a specimen is the ratio, expressed in decibels, (dB) of the sound power incident upon the specimen to the sound power transmitted through and radiated by the specimen when the sound fields on both sides are diffuse.

These measurements were made using a one-third octave band of pink noise, swept in fifteen minutes from 100 to 5000 Hertz (cycles per second). Two such runs were made, with a system interchange between. During each run the ratio of sound pressure levels in the two rooms is automatically and directly recorded graphically. The final results are obtained with a resultant precision better than a 90% confidence limits of $\pm$ 1 decibel.

The Sound Transmission Class (STC) is computed in accordance with ASTM E90-70 and E413-70T. This number is intended to be used as a preliminary estimate of the acoustical properties of the specimen. Ultimate decisions should always be based upon the entire TL curve or values at all test frequencies.

Whenever a filler wall is used in mounting a specimen, the sound power transmitted through that wall is calculated and, incorporated into the measured results before reporting.



PAGE 4 OF 4 , TL 71-211 THIS PAGE ALONE IS NOT A COMPLETE REPORT

THE SOUND TRANSMISSION LOSS OF THE TESTED SPECIMEN IS SHOWN BY THE CURVED LINE IN THE ABOVE GRAPH. THE BROKEN LINE IS THE LIMITING SOUND TRANSMISSION CLASS CONTOUR. THE GRAPH WAS PREPARED ON CODEX PAPER NO. 31, 462.

THE THEORETICAL TRANSMISSION LOSS OF THAT LIMP MASS HAVING THE SAME WEIGHT PER SQUARE FOOT AS THE SPECIMEN CAN BE LOCATED BY DRAWING A STRAIGHT LINE BETWEEN THE TWO SLASH MARKS ON THE EDGES OF THE GRID. THIS WAS DERIVED FROM THE EQUATION: TL = 20 LOG W + 20 LOG F − 33, WHERE W IS WEIGHT IN POUNDS PER SQUARE FOOT, AND F IS FREQUENCY IN HERTZ (CYCLES PER SECOND).