

LEAD INDUSTRIES ASSOCIATION, INC.

292 MADISON AVENUE

NEW YORK 17, N. Y.

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SUBJECT: LEAD WALL REDUCES NOISE

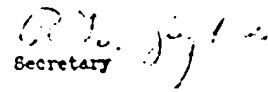
To Members of the Lead Industries Association, Inc.:

Attached is a reprint of an article which appeared in the May, 1963 issue of "Progressive Architecture" by William J. McGuinness, Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

It describes Consolidated Mining and Smelting Company of Canada, Limited's use of its own metal products in the construction of its new head office, in particular the use of the "Lead Wall" for sound attenuation.

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Very truly yours,


Secretary

Look Ahead with Lead

MECHANICAL ENGINEERING CRITIQUE

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 292 Madison Avenue New York 17, N. Y.



Lead Wall Reduces Noise

BY WILLIAM J. MCGUINNESS

Effectiveness of using lead in constructing partitions to reduce disturbing sounds between offices in modern buildings is discussed by the Chairman, Department of Structural Design, School of Architecture, Pratt Institute.

The Consolidated Mining and Smelting Company of Canada, Limited, (Cominco Metals), has made many interesting and effective uses of its metal products in its new head office. The new headquarters, which includes administrative area, general offices, and product display, occupies the top stories of the new building designed by Greenspan, Freedlander & Dunn, and Skidmore, Owings & Merrill, Associated Architects, with interiors designed by Knoll International of Canada, Limited.

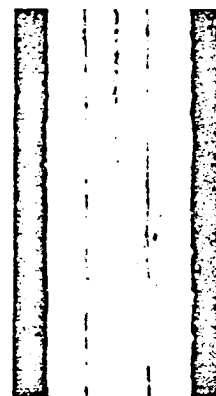
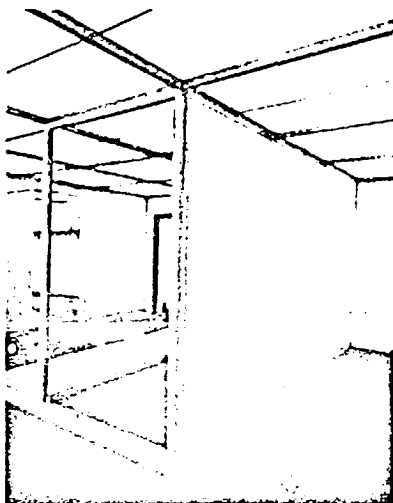
The office photograph shows both of the numerous uses of Cominco metal products: (1) Ceiling grid supporting the translucent lighting panels is made of a zinc alloy. (2) Floor outlets for

power and telephones consist of zinc die castings. (3) Framing members that receive the office partitions have a porcelain-enamel surface. The enamel contains 35 per cent lead oxide, which permits a lower firing temperature, thereby eliminating frame warping. (4) Office partition has a $\frac{1}{8}$ " thick lead core.

In modern buildings, office partitions should be thin, light, and easily rearranged. Most important, the partitions should be acoustically resistant to the transmission of sounds from one office to another. It is possible, of course, to raise the ambient sound intensity level of the quieter office so that overheard conversations are not intelligible. This, however, is sometimes annoying to the occupant of the quiet office. About two years ago, studies were made by the Lead Industries Association on the effectiveness of lead in combination with other materials to provide barriers against sounds that would be disturbing to people in moderately noisy offices. These reductions, approximately 33, 38,

and 44 db, were achieved by using $\frac{1}{8}$ ", $\frac{1}{4}$ ", and $\frac{1}{2}$ " lead cores respectively in constructing the walls.

The walls at Cominco provided a 38 to 40 db loss in the middle range of frequency using only a $\frac{1}{8}$ " sheet of lead, which previously had been credited with about 33 db. After calculations and tests had been made, the metal was adapted to the United States Gypsum Company's "Vaughan Wall." This wall (shown) consists of a lead core enclosed between two sets of double-gypsum layers. Trial studies were made with both $\frac{1}{8}$ " and $\frac{1}{4}$ " lead sheets. Since the $\frac{1}{8}$ " lead core improved the sound reduction by only 1 or 4 db, Cominco decided to use the lighter and more economical $\frac{1}{8}$ " core. It proved satisfactory for the enclosures of "quiet" offices, though not for "very quiet" offices. The sound-reducing qualities of the chosen partition are about equal to those of an 8" brick wall or of a wood stud partition covered on both sides by metal lath and three coats of plaster.



Office partition, 1 1/2" thick provides a 38 to 40 decibel sound reduction. Core of $\frac{1}{8}$ " lead is flanked on each side by $\frac{1}{2}$ " and $\frac{1}{4}$ " layers of gypsum board.