Progress Report on Noise Abatement

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•THIS REPORT has been prepared to show the progress on noise abatement during the period from 1960 to 1962. It is a record of printed information as of January 1963, supplementing information previously published by the Highway Research Board in the reports of the Committee on Roadside Development (HRB Roadside Development 1961, p. 2-4).

The majority of articles published over the past two years relate to airport noise, particularly the jet noise problem in communities where abatement is difficult and costly in comparison to the abatement of highway noise. The noise problem is likely to dominate airport development. Noise control requires early collaboration of airport, government, and local authorities for planning present and future airports and their surroundings. For example, in 1961 in Great Britain, extensions of runways included formation of an earth embankment to shield local residents from engine noise. A considerable number of articles were published in Great Britain and Germany during 1961 and 1962 on measurement of noise emitted by vehicles.

The problem of noise control has now reached a point where it can no longer be ignored in highway planning. In cities and the urban-rural fringe, the Interstate highways carry heavy streams of traffic. In the total concept of urban freeway design, as recommended in the June 1962 Hershey Conference Report on "Freeways in the Urban Setting," basic principles must be considered separately and in relation to one another. They include not only those pertaining to the structural and geometric standards of the freeway itself, but also those pertaining to the amenities which the well-designed freeway offers its users and the residents of the areas it traverses, including those related to social and economic community values.

With the increase in traffic volume, it has been necessary to take measures to control the amount of noise to which people are exposed on or along major arterial highways. The December 1961 Consultant's Report, "Street and Highway Traffic Noise, Washington, D.C.," prepared for the District of Columbia Department of Highways and Traffic, contains data that will be helpful in paving the way for noise control which will be considered a basic requirement of the total area of highway planning and engineering. It is obvious that there is less reaction to highway noise in communities where the source of the noise is unseen. This opens the door for independent roadway design and screen planting which will be included in basic highway planning and design. The consultant's report cited above discusses the aesthetic and psychological impact on the public of landscape design in noise control, including structural features that might be included in the engineering design for noise control. (A preview of this report is on p. 3 of the 1961 Committee Report.)

Noise criteria in residential areas were discussed in "Train Noises and Use of Adjacent Land" by T.F.W. Embleton and G.J. Thiessen, members of the National Research Council of Canada. This timely article was published on page 7 of the Jan.-Feb., 1962 (Vol. 1, No. 1) issue of "Sound—Its Uses and Control," a publication of the Acoustical Society of America. It describes the effect of train noises on the industrial and residential uses of the land adjacent to the railroad right-of-way. Sound pressure levels are given for a variety of train noises at a given distance from the tracks, taking into consideration the effects of the environment such as cuts, barriers of various sorts, trees, etc. Track noise may be reduced to acceptable levels for an urban residential area at a distance of 300 ft from the right-of-way and engine noise at a corresponding distance of 500 ft, if a cut of suitable depth is employed.

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In the city complex, there is more concern with the physical design and development of the highway itself. It is in the city that considerations of urban amenities are added to the design requirements. Here there is concern with the impact of traffic noise on the surrounding area, particularly to dwellers on abutting property. Modern highway planning is not only concerned with the conservation and development of an appropriate highway environment for the motorist, but also for the community. Here highway administrators, locators and designers, and their associates have an overall responsibility to make the completed highway pleasant and agreeable to all concerned. The engineering involved takes on the broad aspect of urban environmental engineering.

Public relations have spurred a re-evaluation of willingness to do something about noise. This is discussed by Howard T. Burris of the Burgess-Manning Company, Dallas, Texas, in the Sept.-Oct., 1962 issue (Vol. 1, No. 5, p. 7) of "Sound." His eye-catching article is titled, "An Approach for Quiet Neighborhood Planning." The author discusses the problem of establishing a satisfactory silencing program for an industrial plant making noise that may annoy neighbors. The treatment takes into account the noise level acceptable to the resident as well as the noise level of the manufacturing equipment.

Appropriate planting of rights-of-way is important as a means of noise abatement. Functional planting for this purpose is one of the elements of design requiring careful consideration. Appropriate planting can help to make the city more attractive and blend the freeway into its urban environment at the same time. A width of 60 ft or more of right-of-way on the outer roadside borders is desirable for buffer planting. Although roadside space for functional planting is limited in urban areas, adequately planted borders lessen the sense of crowding buildings against the roadways, and also insulates adjacent residential and business properties from the noise and fumes of traffic.

On p. 4 of the March-April, 1961 issues of "Noise Control" there is a comprehensive and clear-cut article on "Measurement of Noise" by Lewis S. Goodfriend. This review summarizes the essential requirements and performance characteristics of most types of noise measurement equipment. The environmental conditions under which measurements are made, and an appreciation of the characteristics of the noise being measured are also discussed. Decible notations and use of units in sound measurements are reviewed.

The material presented in this paper outlines the techniques and problems of noise measurement. The references cited by the author should be helpful for the actual planning or design of a test facility or procedure.

Community reaction has brought the challenging problem of noise abatement to engineers responsible for highway development. This requires positive consideration of traffic noise factors in the planning and design of major arterial routes.

A short list of pertinent 1960-62 references follows.

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