

TRAFFIC NOISE FACTORS RELATED TO THE PROPOSED  
MSU CROSS CAMPUS ROUTE

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MICHIGAN DEPARTMENT OF STATE HIGHWAYS

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MSU CROSS CAMPUS ROUTE

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## TRAFFIC NOISE FACTORS RELATED TO THE PROPOSED MSU CROSS CAMPUS ROUTE

To evaluate the possible noise impact of the proposed cross campus route, on MSU facilities and activities, the existing noise levels along the route have been measured, and future levels have been computer simulated. These levels are presented in Figure 1.

To give better subjective understanding of the Figure 1 levels an additional study was conducted along the familiar Michigan-Grand River route traversing the north border of the University through the city of East Lansing. These data are shown in Figure 2.

Additionally, to give a measure of the significance of the presented levels, both figures include some recently suggested daytime acceptability criteria for schools, hospitals, and residences, plus the accepted 70 dbA "protest threshold" (that level which when exceeded usually results in protests). Noise levels and acceptability criteria for nighttime have both been omitted because of the very low night traffic volumes expected.

All levels given for the various MSU facilities represent outside noise levels impinging on that part of the structure in question closest to the traffic noise source. Inside noise levels, devoid of human activity sounds, were measured in Fee Halls, Pesticide Research, Veterinary Clinic, Student Union, and Olin Health Center. These levels, usually called background or ambient, ranged from a low of 42 dbA in the Veterinary Clinic to a high of 50 dbA in Pesticide Research. The background level of 46 dbA inside Fee Hall was unaffected by an 80 to 90 dbA outside level resulting from a passing train.

Examination of the two figures discloses that the traffic noise levels predicted to impinge on facilities along the proposed cross campus parkway in 1990 are in every instance lower than those existing now, and accepted without problem or complaint for many years, at the University buildings along Grand River Avenue; and the 1975 parkway levels are seen to be even lower in comparison.

Admittedly, comparing the proposed route against an existing route of questionable adequacy will be considered by many to be an invalid argument. Therefore, further supporting comparisons are indicated.

In July of this year (1971) a report titled, "Highway Noise, A Design Guide for Highway Engineers," was published by the National Cooperative Highway Research Program (Report No. 117). This study included an attempt to develop a set of noise level criteria for various human facilities and activities. The criteria suggested in the report are based primarily on speech and sleep interference. Admittedly these are only an initial effort towards the eventual establishment of totally rational objectively and subjectively based noise acceptability criteria. It should also be pointed out that most highway researchers and acousticians in Federal and state governments feel that from a practical viewpoint the suggested levels are far too low.

In any event, the criteria as suggested for the type of facilities identified have been included in Figures 1 and 2. And it can be seen that the predicted levels do, in most cases, somewhat exceed the criteria. There is, however, a further factor which bears on this matter and is appropriate for inclusion in the argument.

In January of this year the Michigan Department of State Highways prepared and sent to the Governor a proposed highway vehicle noise control bill. As a result of the Governor's efforts, and strong support from the Department, vehicle noise control bills have now been introduced in both houses of the State Legislature. The final form of the adopted bill is obviously unknown at this time, but one thing is certain; much of the high level noise radiating from our highways is unnecessary and will be brought under control in the near future.

The significance of this factor to the problem at hand--the cross campus route--is that all predicted noise levels in Figures 1 and 2 are based on present traffic noise radiation characteristics and levels; but these characteristics are going to change and the levels are going to be significantly reduced.

This means that the levels predicted for the cross campus route are, in all probability, considerably higher than will actually exist in the future.

The Department's position, in review is:

1. Noise levels at facilities along the proposed route will be significantly lower than those experienced for years at facilities along Grand River Avenue.

2. Although some of the levels predicted to impinge on the facilities along the route exceed the only available acceptability criteria, the Department believes these "suggested" criteria will be met as a result of the im-

pending vehicle noise control legislation.

3. In no instance do predicted noise levels come near to the accepted 70 dbA protest threshold level.

4. The nature of the route and its east and west terminals should preclude any significant use by heavy, diesel-powered commercial vehicles which are the loudest noise generators in the traffic stream.

5. The superior type of building construction utilized by the University prevents the intrusion of exterior noise.

6. Any spot problems which might develop, although none are anticipated, could be eliminated by attractive, landscaped noise barriers of stone or brick located within the parkway right-of-way.

In summary, it is the Department's considered opinion that traffic noise from the cross campus route will present no problems to the students, faculty or staff of the University.

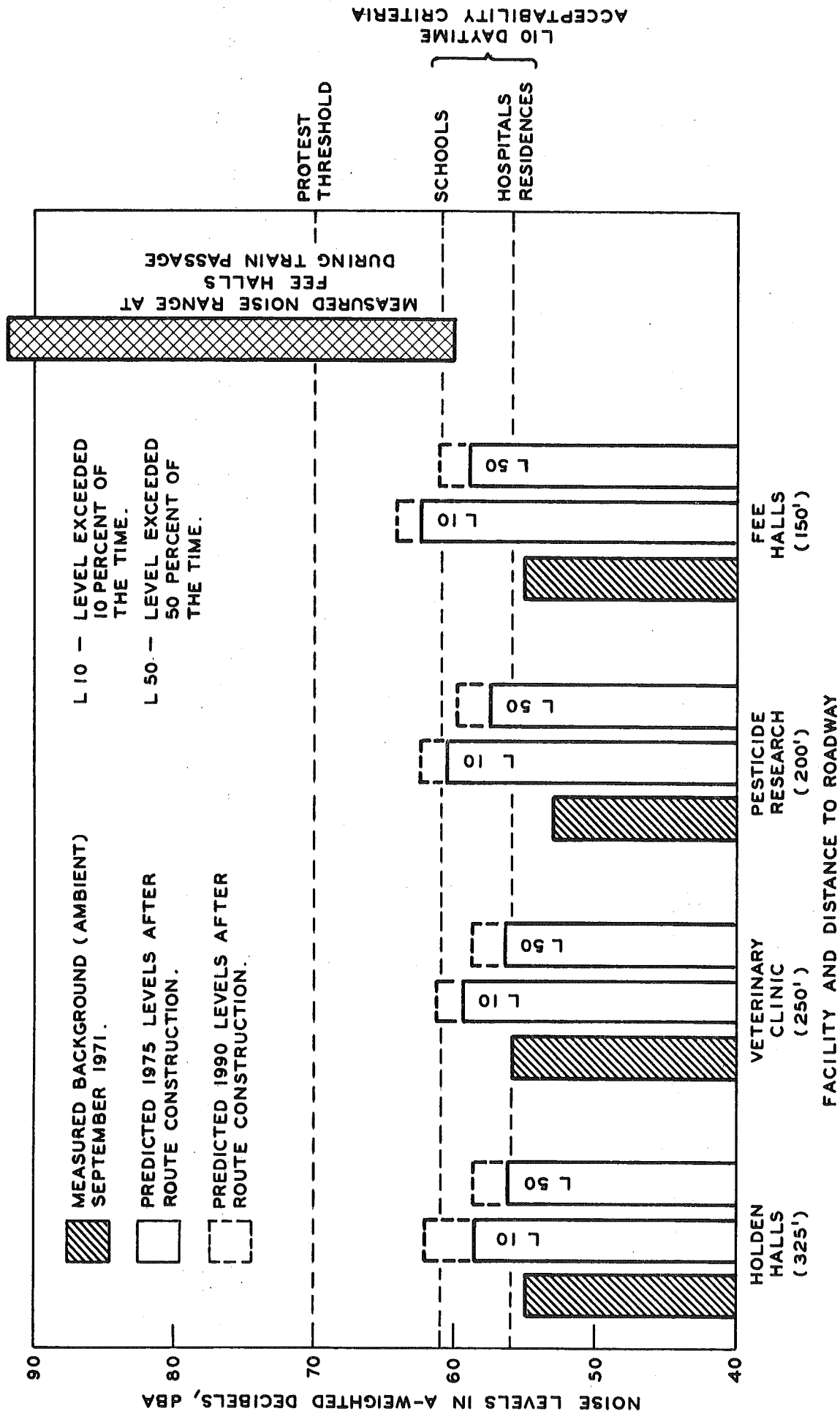


Figure 1. Measured and simulated noise levels at selected MSU locations adjacent to the proposed MSU cross campus route.

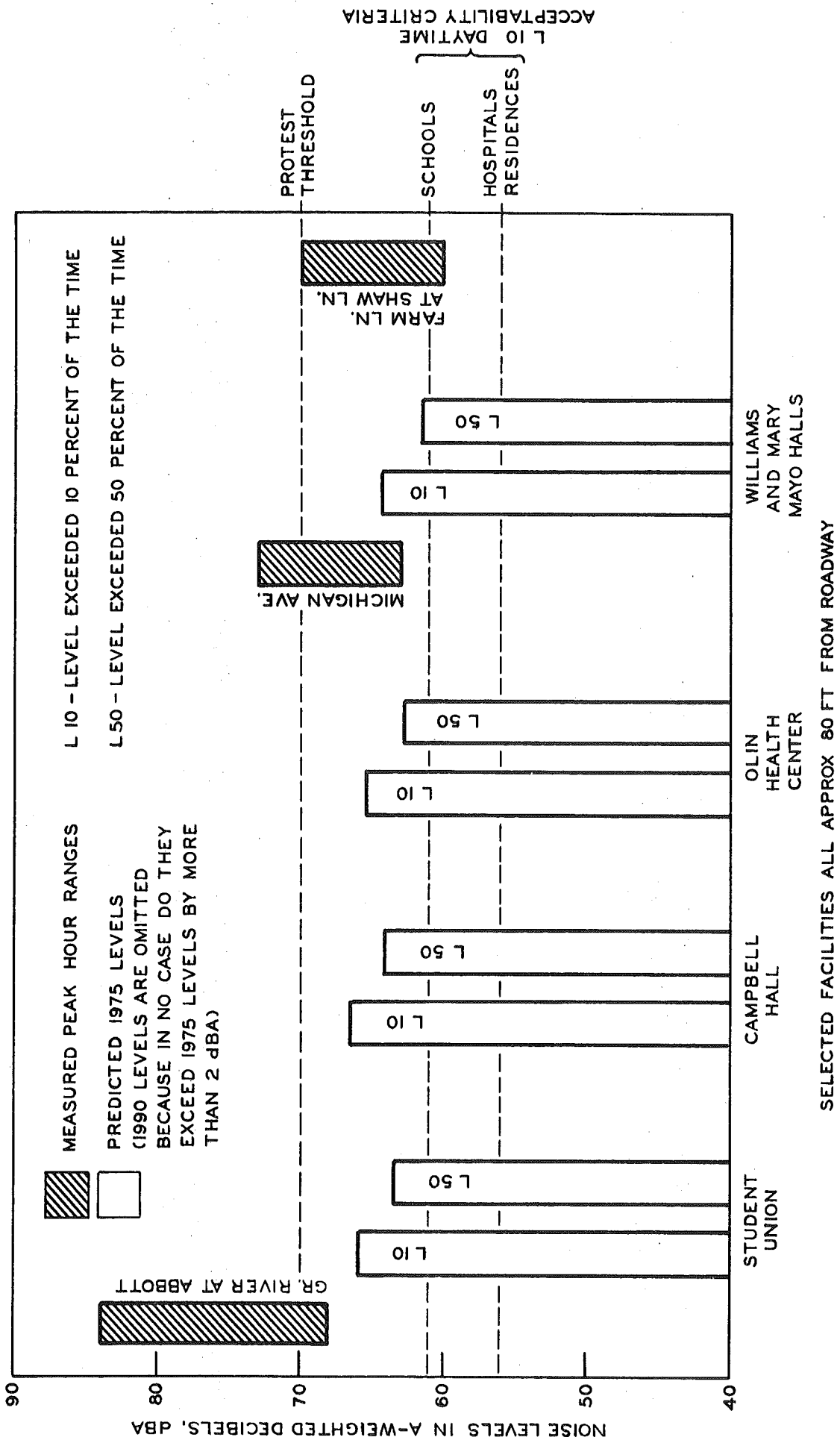


Figure 2. Measured and simulated noise levels at selected MSU locations adjacent to Michigan and Grand River avenues in East Lansing.

1 Using the method of NCHRP Report No. 117.