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REDUCTION OF TRAFFIC NOISE AT THE SOURCE

by

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New Jersey Department of Transportation
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16. Abstract

Two main sources were used for a broadbase literature search to obtain information to support the concept of legislating to reduce traffic noise at its source: 1) The results of a questionnaire sent to all states to obtain information on their barrier programs and traffic noise policies; 2) Information from reports and articles pertinent to the financial, legislative, and technical aspects of the concept.

The conclusions drawn from this literature search were:

1. There has been some reduction in traffic noise due to automobile, truck, and pavement redesign, but not to the extent that noise barriers can be lowered or eliminated. Vehicle manufacturers have no real incentive to initiate further improvements, especially without government financial support. Transportation agencies will probably continue to improve pavement design because previous efforts have resulted in other benefits besides noise reduction;
2. The questionnaire survey showed that there is moderate support to reduce traffic noise at the source through legislation. This would probably increase if there were proven technological improvements available for utilization;
3. In the past, legislating to force compliance with noise criteria has met with considerable resistance, and has resulted in a multi-billion dollar barrier program. It would be much more effective to first provide the technology and then legislate to insure its use.

The resulting recommendation was that a pooled fund study be undertaken to research the modification or redesign of specific vehicle components, evaluate them under field conditions, and then attempt to have them utilized through appropriate legislation and regulations.

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TABLE OF CONTENTS

SUMMARY

A broadbase literature search was undertaken to obtain information to support the concept of legislating to reduce traffic noise at its source, so that noise barriers can be lowered or possibly eliminated. Two main sources were used: 1) The results of a questionnaire which was sent to all states to obtain information on their noise barrier programs and traffic noise policies; 2) Information from reports and articles on the financial, legislative, and technical aspects of the concept.

Thirty of the fifty states replied to the questionnaire, and nineteen of those sent copies of their noise policies. The questionnaire replies were tabulated for easy reference (see Appendix I, page 24). The noise policies, and financial and technological reports and articles were reviewed and the information therefrom presented in the RESULTS AND DISCUSSION section of this report. Brief summaries follow below.

Cost information taken from an FHWA report on barrier construction for 1970-1995 indicates that a total of $1.497 billion was spent during the period. Nine states accounted for 75% of this expenditure.(11) Of the nine, only Michigan has been active in trying to reduce traffic noise at the source.(13)

There has been considerable research to try to produce quieter pavements. Minnesota changed the spacing on its anti-skid pcc

pavement grooving twice in order to reduce roadside noise levels. Bituminous pavements such as NOVACHIP, open-graded, and porous mixes have been tested and found to be somewhat quieter than more standard designs. Unfortunately, the tests are not standardized. Some pavements were tested on tracks at low speed, so the results may not be indicative of their field performance.

The public is as aware as traffic noise professionals that pavement condition effects traffic noise levels. Minnesota DOT surveyed residents in nineteen locations where barriers had been constructed, and received seventeen comments about the need to resurface to reduce noise at three of them.

Legislation at the federal level has been somewhat effective in reducing truck noise levels, but certainly not to the point where barriers can be eliminated, or even lowered in most cases. One author emphasized the fact that meeting legislative requirements can be a function of the testing procedure and the locale of the test, as much as it can be a function of changes in design.

At the state level, Michigan passed a law requiring lower noise levels for trucks and passenger cars. However, they could not enforce it due to the opposition of muffler and vehicle manufacturers.

There was very little in the literature on body, tire, and truck exhaust noise, and only one reference on truck engine noise.

CONCLUSIONS

The following conclusions are based on the results of this literature search.

1. There has been some reduction in traffic noise as a result of automobile, truck, and pavement redesign, but considerable research will be required to gain further reductions. There is no real incentive for manufacturers to initiate any further improvements in vehicular design, and it is unlikely that they will without government financial support. Transportation agencies will probably continue to modify pavement designs, since this has resulted in other benefits besides reduced noise levels.

2. The questionnaire survey showed that there is moderate support for legislation to reduce traffic noise at the source. There is some indication that this would increase substantially if there were proven technological improvements available for utilization.

3. Legislating to force industry and government agencies to comply with noise criteria has met with considerable resistance in the past, and has resulted a multibillion dollar barrier program. It would be much more effective to first provide the technology to reduce traffic noise at its source, and then legislate to require its use.

RECOMMENDATIONS

The complexity and cost involved in modifying or redesigning tires or vehicle components to obtain a substantial reduction in noise levels is such that it is unlikely any single state will attempt even part of the effort. It is therefore recommended that a pooled fund study be undertaken to research the modification or redesign of specific components, evaluate them under field conditions, and attempt to have them utilized through legislation and regulations.

INTRODUCTION

Late in 1996 the New Jersey Department of Transportation decided to take the lead in sponsoring and drafting national legislation designed to reduce traffic noise at its source. The ultimate purpose of this legislation was to reduce traffic noise to the point where noise barriers could be eliminated. A brief questionnaire and cover letter were sent to all state chief engineers, in order to obtain information on non-construction barrier costs, support for the proposed legislation, and other data. A copy of the state's traffic noise mitigation policy was also requested. A copy of the questionnaire and the cover letter are in Appendix II, page 26.

A literature search was also conducted to identify state-of-the-art non-barrier noise reduction technology. Resources used included the NJDOT Information Center, the NJDOT Research Dialog System, the Princeton University Engineering Library and the Rutgers Library of Science and Medicine.

In addition, the FHWA report <u>Highway Traffic Noise Barrier Construction Trends</u> was used to obtain considerable data on barrier costs and size.(11) This report was published in December, 1996 and covers the period from 1970 through the end of 1995. It includes barrier statistics from all 50 states plus Puerto Rico, the District of Columbia, and the Dulles Airport access highway.

STUDY PROCEDURES

Study procedures comprised the following activities.

1. Tabulating and analyzing the questionnaire data: This was not as straightforward as it should have been, since some states responded with comments or brief discussions, instead of answering the questions. The results of this tabulation are shown in Appendix I, page 24.

2. Tabulating and analyzing the data from the FHWA report previously described(11): The purpose was to establish size and cost comparisons between the states for barriers made from the same materials. There are approximately 2300 entries which list the type of material used for each barrier, height and length in meters, cost per square meter, total cost of each barrier, location, and total cost of barrier construction for 1970 through 1995, by state. Tabulating this information was extremely tedious and time-consuming because the listing was by state in alphabetical order, followed by location within each state in alphanumeric order. Barriers for adjacent listings were not necessarily made of the same material, so each entry had to be color-coded as to material so that it could be grouped with others of the same material for tabulation by state.

3. Conducting the literature search and reporting on the findings: Over 600 abstracts were reviewed for pertinent publications. The initial cut reduced this to about 50, and further cuts resulted only in 16 finally being used.

4. Reviewing the noise policies and other documents sent from the responding states and analyzing the information: The cover letter (see Appendix II, page 27) asked for a copy of each state's noise policy. The questionnaire (see Appendix II, page 26) asked if the state had conducted a public opinion survey. Those that had done so sent copies of the survey reports. All documents were reviewed for information which would support legislation for reduction of traffic noise at the source.

The findings resulting from these tasks are described and discussed below.

RESULTS AND DISCUSSION

Questionnaire Information

Thirty states replied to the questionnaire and the results were tabulated as shown in Appendix I, page 24. Ten states said that they will support the proposed legislation; twelve said that they may; six did not answer the question; two sent brief letters explaining why the questionnaire was not returned. In those instances where there was not a clear response, no attempt was made to infer an answer.

State Noise Policies

Of the thirty states which replied to the questionnaire, 19 sent copies of their noise policies. California has its policy on the Internet, and provided the address only. Minnesota has its policy in various sections of its policies and procedures and is in the process of consolidating the information into one document. Florida did not send a copy of their policy, or refer to it in their cover letter. The remaining states which answered the questionnaire have no policy at present.

Only four of the noise policies received - Kansas, Kentucky, Michigan, and Oregon - cite reduction at the source as a method of mitigating traffic noise. Kansas makes the briefest reference to it as one of three methods, implying that private industry must be relied on for any advances.(22) However, their answer to Question 5 on the questionnaire was an unequivocal "Yes".

Kentucky refers to it only in passing, with the statement that it is a long-term possibility, but not a method which would provide near-term relief. Their answer to Question 5 was "Would need to review legislation before making decision" to support noise reduction at the source.(17)

Oregon, by contrast, cites reduction at the source as the "...most effective, far-reaching, long-term solution to the problem of traffic noise." They also state that they ".. will support reasonable legislation and effective enforcement..." and briefly describe what action they are willing to take.(21) Oregon answered "Yes" to Question 5 and is one of the low-end spenders on barriers.

Michigan has gone well beyond any of the other states answering the questionnaire. In 1978 they passed legislation to limit the maximum noise levels for cars, motorcycles, and trucks. However, there was so much opposition by vehicle and muffler manufacturers that they were unable to implement enforcement regulations. Nevertheless some cities have enacted ordinances based on the statute and are enforcing them. The success of these municipal efforts is probably due to the fact the the Michigan Vehicle Code authorizes Michigan DOT to provide equipment and training to local governments for enforcement. Accordingly, MDOT provides training in the theory of sound propagation, measurement and enforcement procedures, and has a loan program for the equipment necessary for enforcement. About 40 municipalities are presently participating in this program.(13)

Michigan did not answer Question 5 but instead offered a very brief discussion of the reasons for increased highway noise levels. In view of their past and present efforts, however, it can probably be assumed that they would support legislation designed to reduce traffic noise at the source.

Surveys of Public Response to Noise Barrier

Five of the responding states had conducted surveys specifically to assess public response to noise barriers. One state combined a survey with an objective evaluation of a barrier. These surveys run from 1974 to 1984. Since they are designed to obtain subjective data about specific barriers, none of the questions pertains to noise reduction at the source. However, for the reports in which comments were listed, there were instances in which the respondents cited resurfacing the roadway and quieter vehicles as an additional or preferable means of reducing traffic noise.

Caltrans received four comments from two surveys in San Jose which stated that the roadway should be resurfaced to reduce noise, in addition to the construction of the barriers.(9) Minnesota DOT conducted surveys at 19 locations in the Minneapolis-St. Paul metropolitan area. Their report cited seventeen comments on resurfacing and three on reducing noise from vehicles.(14)

Minnesota also sent a copy of a report from MnDOT to their Legislature.(15) This report shows the results of their tests of different anti-skid groove spacing on pcc pavement. By changing the spacing from 1" to 1.5" they reduced roadside noise levels by

2.5 - 4.0dB. More recently, using the results of a Wisconsin study, they reduced their spacing to .75", for a further reduction of 1.5 - 3.5dB and an overall reduction of 4.0 - 7.5dB. Both states also conducted tests on different types of bituminous pavements which showed that even further reductions could be achieved. No details about the data collection process or data analysis were given.

FHWA Report Data

An attempt was made to statistically analyze the cost data provided in the FHWA report, to support the idea that it is much less costly to reduce noise at the source, than to build barriers. However, this effort proved futile. There were several reasons for this.

First, cost information was missing in many instances. For example, Virginia had 30 metal barriers listed, but only 10 of them had cost information shown. There was no way to tell if the average cost of those 10 was representative of all 30, considering the wide range of costs for metal barriers in other states.

Second, the information is inaccurate, although to what extent is not known. For instance, neither the metal barrier on I-280 in Harrison or the block barrier on Rt. 17 in New Jersey is listed. There are also at least three major errors in height listings

(.6m=23%, .9m=41%, 1.9m=88%), which makes the cost data questionable. Also, the report summary states that 2% of the barriers are made from recycled materials, but there is no mention of such materials in the detailed descriptions for each barrier.

Third, some states built only one or two barriers of a certain type, at a very low (or high) cost, as opposed to another state which built dozens, all at higher, lower, or intermediate costs. Comparisons between states in these instances is meaningless.

Fourth, costs for each type of barrier sometimes vary widely within one state, while in another state they are almost uniform. This in itself does not preclude statistical comparisons, but such comparisons are not very informative and have no bearing on the concept of reducing traffic noise at the source.

Unfortunately, the effect of these problems did not become clear until after the data compilation was completed and a concerted effort had been made to analyze the results. However, some information of value was obtained from the compilation and the report summary. This is detailed below.

The total cost of 26 years of barrier construction in 1995 dollars was $1.497 billion for 2,121 kilometers of barriers of all types. This total is actually slightly higher because some costs were not reported, as previously noted. Seventy-five percent of this expenditure has occurred since 1986. Highway agencies have averaged over $113 million annually since 1986. These figures are for 41 states, Puerto Rico, and the Dulles Airport access highway. Nine states and the District of Columbia had no barriers as of the end of 1995.

The top five spenders for the entire 26-year period are listed in Table I below.

TABLE I

STATES SPENDING THE MOST MONEY ON NOISE BARRIERS, 1970 -1995

STATE	TOTAL COST (rounded)	NO. OF BARRIERS	AVE. COST/KM
California	$439 million	544	$625,722
New Jersey	$164 million	45	$1,438,771
Virginia	$106 million	196	$908,002
Maryland	$90 million	48	$1,627,690
New York	$78 million	105	$873,063

These five states have spent 59% of the money. Adding the next four highest (PA, MN, MI, FL) brings the amount to 75%. In other words, 17% of the jurisdictions have spent 75% of the money.

If New Jersey is deleted from this list, and the remainder are examined regarding their answers to Q5 (Will your agency support legislation...etc.) on the questionnaire, the following interesting information comes to light:

1. Maryland, Pennsylvania, and Virginia did not return questionnaires;

2. Michigan did not answer the question;

3. California, New York, Minnesota, and Florida answered "perhaps", depending upon cost/benefit, nature of the legislation, effect on "stakeholders", etc.

Five of the ten states which answered "Yes" to Q5 have built no barriers (HI, ID, MT, ND, WY). The other five (AZ, KS, NC, OR, SC) account for only about 4.3% of the total spent for the 26-year period.

Literature search

The initial cut from 600 abstracts to 50 possibly useful articles and reports was subsequently reduced to 21, only 16 of which contained information in any way pertinent to the study. As the study progressed other sources became evident, and the information from these was incorporated into this report.

The findings from all sources can be categorized under three general headings: pavement design, vehicle design, and regulatory information. Vehicle design can be subdivided into engine, exhaust, body, and tire design.

Pavement Design

Approximately 15 years ago NJDOT researchers learned two important facts during their research into barrier effectiveness on Rt. 444 (Garden Sate Parkway). The first was that roadside noise levels from off-peak 100% passenger car traffic on old pcc pavement could be equal to - or greater than - roadside noise levels from interstate highway traffic containing up to 20% trucks, on new pcc or bituminous pavement. The second was that placing an overlay of the (then) standard bituminous riding surface over the old pcc pavement reduced the noise levels from passenger car traffic by 6 - 8dB.(4)

In 1994 tests were conducted on the Garden State Parkway using an overlay of NOVACHIP, placed on a pcc pavement which was at least 30 years old. Before and after roadside noise levels were recorded for AM and PM peak period traffic, which included buses and trucks of various sizes. The NOVACHIP overlay resulted in noise level reductions of 3.2 - 4.1 dB. There would probably have been a greater reduction, except for the fact the only two of the three lanes were concrete. The near lane already had a smooth bituminous riding surface at the time of the before study.(23)

In a partially completed study of a three-year-old (approximately) NOVACHIP overlay on Rt.12 in New Jersey, in-car measurements showed that the NOVACHIP was 1.2 dB quieter than a brand new I-4 overlay. However, it was quieter than an adjacent section of old bituminous pavement (10+ years) by 4.3dB. In comparison, the I-4 overlay was only 3.1dB quieter than the old pavement. These results are indicative of the comparative differences and magnitudes which would be found from roadside measurements.(3)

The studies cited above clearly show that pavement condition substantially affects traffic noise levels for both cars and trucks. While this is self-evident for the most part, the studies did quantify the noise reduction which might be expected from a new versus old riding surface.

In 1994 there was a Japanese study using a riding surface called Porous Elastic Road Surface (PERS).(19) Results showed a reduction of 2.0dB for heavy trucks, 3.5dB for light trucks, and over 10.0dB for passenger cars, compared to a densely graded non-rubberized mix. However, these results were obtained on a test track, under idealized conditions, at 60 k/hr (37.5 mph).
The study also reports that the pavement has unacceptably low skid resistance, and that there is a danger of the riding surface being a fire hazard, as well as other undesirable qualities.

From its description, PERS appears to be similar to New Jersey's open-graded rubberized mix. While New Jersey's mix has none of the negative aspects of PERS, it does not provide any useful reduction in overall noise levels (<<3dB). However, it does provide a perceived reduction because the frequencies generated by tire-roadway interaction are lower than those from the standard dense-graded I-4 surface.(10)

Several European countries have assessed the noise generation characteristics of porous asphalt pavements, and found that they reduce noise by 1 - 10dB, depending upon pavement design, speed, age, and type of vehicle.(1,2,24,25) Some of the pavements tested are actually porous in order to provide vertical drainage. Others seem to be analogous to NJDOT's open-graded mix. The pavements which are accurately described as porous provided appreciable noise reductions of 6 - 10dB, according to the studies.

As already noted, the literature indicates noticeable reductions in noise levels generated by new standard and new special pavements versus old pavements. However, there is nothing to indicate that new special pavements provide any real advantage (a reduction of 3dB or more) over new standard pavements.

Last, FHWA has finally recognized the fact that different types of pavements effect the noise levels. Their report on data collection for the new traffic noise model lists three pavement types: portland cement concrete (PCC), dense graded bituminous concrete (DGBC), and open graded bituminous concrete (OGBC).(6) Although there is considerable mathematical development to support the findings, the simplest and quickest way to determine the effects is from the graphs provided in the report. These are interpreted in Table II below, for 55 mph.

TABLE II

RELATIVE NOISE LEVELS AT 55 MPH

FOR DIFFERENT PAVEMENT TYPES

VEHICLE TYPE	PCC	DGBC	OGBC
Cars and Light Trucks	78.0	75.0	73.0
Medium Trucks	82.5	80.5	80.0
Heavy Trucks	85.6	84.7	83.3

Although the derivations of the graphs in this report are the result of data collected from pavements in a variety of conditions, it is clear that OGBC generates lower noise levels than PCC or DGBC.

Vehicle Design

Engine: In 1990, Hino Motors, Ltd. of Japan developed a prototype engine for use in medium-heavy duty trucks and buses.(5) A major reason for designing this engine was to comply with noise regulations and the requirements of users for a reduction in both interior and exterior noise. By implementing standardized noise reduction techniques they were able to reduce noise from the prototype only 1 - 2dB overall. This engine was put into production, but they continued to attempt further noise reduction. Eventually they were able to reduce to the overall level by another 3dB, without changing the weight or cost of the engine. The article does not give any information on roadside vehicle exterior noise levels on the highway.

Tires: Tire design is an exercise in finding the best compromise amongst the various requirements that comprise a good tire. If "low noise" is also required, tire design becomes much more difficult.(27) A tire which is acceptably quiet on one pavement may be unacceptably noisy on another. Hence, tire noise must be considered as a function of pavement design and condition, as well as speed, vehicle design, traffic conditions, and driver technique. In any situation, pavement and vehicle design are fixed, but speed, traffic conditions, and driver technique are variable. Designing a "low noise" tire which meets all other requirements for safety, comfort, handling, wear, cost, etc. will require considerable and concentrated research.

Regulatory Information

The so-called 80dBA noise standard for trucks took effect on January 1, 1988 for trucks over 10,000 lbs. GWV being manufactured after that date.(20) Actually, this level applies only to trucks moving at 35 mph or less, so that (theoretically) tire noise is not a factor. This level certainly cannot be construed as quiet, since 80dB is perceived as being 3 times as loud as normal conversation. In short, it is the level of a shout. Noise from trucks moving at highway speed is substantially higher than 80dBA.

However, truck noise has been reduced over the past 15 years. Medium truck noise levels have dropped 1.5 - 3.2dB and heavy truck noise levels have dropped 2.1 - 3.7dB in New Jersey.(26) This is probably a result of compliance with the truck noise regulations which went into effect in January, 1978.

No regulations for light trucks or passenger cars have been adopted at the federal level, but some state and local governments did adopt an 80 dBA level in 1975. Some states also provided proposed future standards as low as 70 dBA.(11)

As already indicated, measurement of the noise level generated by a specific vehicle is dependent upon many factors, including test site variability. A vehicle which complies at one site may not comply at another, or vice versa. Furthermore, vehicles which meet the 80dBA limit using U. S. tests may also meet the 77 dBA European limit which uses a different test procedure. This contradicts the idea that imposing and enforcing a lower limit automatically insures that vehicle noise levels will drop.(16)

This variability in compliance underscores the fact that positive "laboratory" test results may not produce any real world benefit. Therefore politicians and other regulators need both a greater technical understanding of the subject of traffic noise and its control, and the ramifications of the regulations they adopt. As noted previously, traffic noise is not generated by the vehicle as an entity, but by various vehicle systems, the roadway, the driver, and traffic conditions. The interaction of these factors produces the noise, and in order to reduce that noise each has to be treated separately.

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APPENDIX I

RESPONSES TO QUESTIONNAIRE

STATE	Q1	Q2	Q3	Q4	Q5
AZ	Unknown	Minimal	50	N	Y
CA	$13 mil.	$5+ mil.	Unknown	Y	P
CO	$60K/barrier	$76,862	3	N	P
DE	$200,000	Unknown	75	N	P
FL	Unknown	<$10,000	Unknown	Y	P
HI	$400,000	Unknown	1	N	Y
IA	<$5 million	Minimal	Unknown	N	P
ID	$10,000 an.	Unknown	15	N	Y
KS	99%	Unknown	90	N	Y
KY	$250,000+	Unknown	30-50	N	P
ME	Unknown	-0-	Unknown	N	P
MI	Unknown	Unknown	Unknown	Y	Unknown
MN	Unknown	$95,000	Unknown	Y	P
MS	No barriers	NA	Unknown	N	No answer
MT	No barriers	NA	<5	N	Y
NC	Unknown	Unknown	Unknown	N	Y
NE	$2,000,000	-0-	40	N	No answer
NH	Unknown	NA	Unknown	N	No answer
ND	-0-	-0-	.2	N	Y
NM	$100,000	$40,000	1	N	P
NV	Did not return questionnaire				
NY	Unknown	Unknown	Unknown	N	P
OK	$350,000	Unknown	<10	N	P
OR	$300,000/yr.	Unknown	Unknown	Y	Y
SC	$5,000/yr.	-0-	Unknown	N	Y

STATE	Q1	Q2	Q3	Q4	Q5
SD	No barriers	NA	NA	NA	No answer
VA	Did not return questionnaire				
VT	Unknown	-0-	Unknown	N	P
WI	$1.534 mil.	$600	100	N	Unknown
WY	No barriers	NA	NA	NA	Y

N: No
Y: Yes
NA: Not applicable
P: Perhaps: Many respondents cited various stipulations regarding their support.
Unknown: Either respondent did not know, or cannot be determined from response.

APPENDIX II

NOISE MITIGATION QUESTIONNAIRE
New Jersey Department of Transportation

1. What is the total non-construction cost (initial noise studies, design, evaluation after construction, maintenance, etc.) of your noise barrier program to date?

____

2. What is your annual maintenance cost for noise barriers?

____

3. What percentage of the total population of your state that needs traffic noise mitigation can be protected by barriers?

____

4. Has your state conducted a formal survey to get either driver or resident response to the effectiveness and/or appearance of noise barriers? If so, please send us a copy of the survey report.

____

5. Will your agency support legislation designed to reduce traffic noise at its source, in order to eliminate or greatly reduce the need for noise barriers?

____

Questionnaire Completed By:

Agency: ______________________________

Contact Name: ______________________________

Contact Phone: ______________________________

Mail Completed Questionnaire and Copy of Current Noise Policy to:
Brian Strizki, Manager, Quality Management Services
NJDOT, CN600, Trenton, NJ 08625

State of New Jersey

DEPARTMENT OF TRANSPORTATION
1035 Parkway Avenue
CN 600
Trenton, New Jersey 08625-0600

CHRISTINE TODD WHITMAN
Governor

John J. Haley, Jr.
Commissioner

March 25, 1997

TO ALL STATE CHIEF ENGINEERS:

New Jersey is taking the lead in a new approach to mitigation of traffic noise. Specifically, we want to reduce traffic noise at the source, rather than continue to build inordinately expensive and unattractive barriers as the only means for providing relief for areas adjacent to our highways.

Although effective, noise barriers serve to protect only that small percentage of the population which lives or works at locations adjacent to freeways. Those adjacent to non-freeway roads presently receive no protective at all from traffic noise which is as loud or louder than that from freeways. Reduction of noise at the source would provide much-needed relief.

In recent years significant advancements have been made in reducing aircraft noise at the source and to a much lesser extent some advances have been made in pavement, tire, and truck design which have reduced noise output from the roadway. Passenger car design and construction have also improved, but none of these improvements have been to the extent that allows us to eliminate or substantially reduce the size of our barriers.

To undertake traffic noise reduction at the source, we intend to refocus USDOT and FHWA policy towards mitigating noise at the source and set aside funding to research and develop noise reduction equipment to reduce truck and automobile noise.

In support of this effort, I am asking each state to complete the enclosed questionnaire and supply us with a copy of your current noise mitigation policy.

Sincerely,

Brian Strizki

Brian Strizki
Manager
Quality Management Services

Attachment