

STANDARDS FOR GREATER SAFETY ON THE HIGHWAYS

by

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It is a distinct pleasure for me to appear before the 19th Annual Kentucky Highway Conference. Being a newcomer to Kentucky, I realize that it is an honor, indeed, to be asked to appear before a group such as this to provide some of my thoughts concerning a current problem. I want to extend my thanks to your conference committee for asking me to appear and for handling the arrangements so well. Also my special thanks go to Mr. W. B. Drake of the State Highway Department, who asked me to speak and who has been my adviser concerning this conference.

You see by the conference program that I am going to talk on the subject of "Highway Safety." But in addition to discussing design and construction which you, as highway engineers, hear so regularly, I am going to cover the topic of "Highway Safety" a little broader.

We have become callous to accident injury and death in this country. Some, like me, have lost the perspective of what these injuries and deaths mean in terms of anguish and pain. Highway safety, or perhaps I should say "unsafety," has been accepted as statistics - so I will give you a few.

Each day 10,000 injuries occur on the highways. Each week over 1,000 people are killed on the highways. These numbers are large and impersonal, so let me bring them closer. Before I finish talking, over 200 people will be injured and three people will be dead as a result of highway accidents.

Men are ingenious characters. We have never been willing to be controlled by the limits of our own bodies. Anytime we want to be something that is not completely attainable within ourselves, we always develop something which provides us larger latitudes in which to operate. For example, when we couldn't see far enough, we developed the telescope; when we couldn't see small objects, we developed the microscope; when we couldn't holler far enough, we developed the telegraph and telephone; when we weren't strong enough to lift objects, we developed machines; when we weren't fast enough, we developed wheels; and when we couldn't

go high enough in the air by jumping, we developed wings and rockets. With that much ingenuity, it is almost impossible to believe that men have not been able to solve the problem of safety on the highways.

In the past, you have all been involved in safety campaigns which have been primarily slogan campaigns, including such items as "The Life You Save May Be Your Own," or "If You Drink, Don't Drive." These slogan campaigns, however, have never gotten to the root of the problem, nor have they solved safety problems in any solid fashion.

Since man as an individual has not seen fit to solve the problems of highway safety, men operating through our National Congress have finally taken some far-reaching steps to improve safety. Not only did Congress dictate safety, but they provided financial help to do it.

We have learned that safety is not corrected by a simple adjustment on the "nut behind the wheel". If safety is to be really improved we must work not only on the "nut" (or driver), but also on the automobile and the highway. Therefore, my discussion this morning will cover all three of these programs to improve safety on our highways.

In 1966, Congress passed the National Traffic and Motor Vehicle Safety Act. Under this Act, the Secretary of Transportation, through the Federal Highway Administrator, is to issue safety performance standards for all passenger cars manufactured for sale in this country after January 1, 1968. This program is currently getting the most public interest and attention. Twenty vehicle standards have been issued to date, applying to cars and equipment. In addition, proposed standards for passenger car tires and rims have been issued.

The Federal standards already issued cover such things as energy-absorbing steering columns, new laminated windshield glass, back-up braking systems, padded interiors, reflecting surfaces, rear-view mirrors, seat belts and torso belts, and stronger door latches and hinge system.

Proposals for 47 other standards were released by the Secretary of Transportation on October 13 this year. The new proposals would affect brakes, tires, lights, windshields, child protection, impact protection, pedestrian protection, speed control, locks and latches, ample absorbing features, fuel tanks and lines, fire retardant interiors, and non-operational and safety emergency features.

The objective of these standards is to make the automobile a safer vehicle by helping to prevent or reduce the number of accidents, and to make it a safer package by helping to reduce the severity of injuries

when accidents occur. This program speaks for itself as to its importance in the broad attack on highway accidents, injuries, and deaths.

Also, in 1966, Congress passed a second Act concerning highway safety. This Act, "The National Highway Safety Act", directs the Secretary of Transportation, through the Federal Highway Administrator, to set standards for the States in various areas having bearing on highway safety. This Act, in my opinion, holds a greater potential for the reduction of highway accidents, injuries, and deaths than either of the other two areas of highway safety.

Because there has been so much in the newspapers concerning vehicle safety standards, the public has not heard very much about the State safety standards that have been issued under the National Highway Safety Act. Therefore, I would like to discuss the current 13 standards which have been issued.

These safety standards require every State to have an effective program for periodic Motor Vehicle Inspection, for Motor Vehicle Registration, for Motorcycle Safety, for Driver Education, and for Driver Licensing. In addition, there are requirements for improved traffic codes and laws, traffic court systems, and emergency medical services. Also required are improved standards concerning alcohol in relation to highway safety, improved identification and surveillance of accident locations, improved traffic records and standards for highway design, construction and maintenance, and traffic control devices.

In addition to the 13 standards just listed, the Federal Highway Administration is working on the development of three more standards. These include the areas of pedestrian control, police service and debris removal.

The Act envisions a cooperative effort between Federal, State and local governments to stimulate these new and improved programs. I cannot emphasize too strongly that this is NOT a Federal program. It is a national program which calls for substantial State and local effort, which provides Federal matching funds for both State and local assistance, and whose success depends, in the main, on the effectiveness of State and local effort.

But I offer this warning. These safety programs will require a lot of people to give up, or at least to be willing to re-examine, many long-held and cherished beliefs as to what should be done in the area of highway safety, how it should be done, and who should do which part of the job. It will involve the reshaping of some concepts and practices which

many regard as inviolate -- whether in government, business, education, or elsewhere. In short, we will be required to restructure our scale of values; this is not easily done.

There are those, for example, who believe that compulsory motor vehicle inspection programs do not significantly affect accident rates. We know, however, from the States which have legislation requiring effective periodic vehicle inspection, that more often than not inspected vehicles are deficient in one or more components that are important to safety. Therefore, the Federal standard requires a program for the inspection of all registered vehicles.

As another example, there is a considerable body of opinion which views the driving license as an inalienable right rather than a privilege. This view is challenged by the Federal standard which requires States to establish effective, uniform licensing, testing, and renewal procedures. These must include minimum age limits, mandatory eyesight examinations, driving skill tests, ability to read and comprehend traffic signs and signals, and a knowledge of traffic laws.

This standard is designed to ensure that only those persons physically and mentally qualified may drive -- and equally important, to prevent the needless denial of the opportunity to drive to any citizen.

Another area of past resistance to change involves alcohol in relation to highway safety. The driver who drinks is one of the major problems affecting safety. Despite this, there are still too few effective State programs dealing with this issue.

The Federal standard requires each State to establish specific test procedures for determining a driver's blood-alcohol content. It provides that the blood-alcohol concentration level at which a driver may be deemed intoxicated shall not be set higher than 0.10 percent by weight. It requires an "implied consent" law, whereby any person placed under arrest for operating a motor vehicle while under the influence is deemed to have given his consent to a chemical test of his blood, breath, or urine. Finally, it requires the examination for alcohol content of all highway fatalities and surviving drivers in fatal accidents.

Another standard requires comprehensive driver training programs to be made available to all youths of licensing age. It provides for training and retraining programs for adult drivers. It requires certification of driving instructors and licensing of all commercial driving schools, and establishes an acceptable level of instruction.

Deaths and injuries from motorcycle accidents have assumed grave proportions in recent years, and most of the victims are young people. The Federal standard requires each State to have a law governing motorcycle safety. It must include a requirement that individuals be examined and licensed specifically for the operation of motorcycles. Operators must be required to wear an approved safety helmet and eye protection. Seats, foot rests, and safety helmets are also required for passengers.

Another standard calls for the development of uniform traffic codes and laws throughout local jurisdictions within a State, and a program to make such codes and laws consistent among the States.

Still another requires a motor vehicle registration program which provides for rapid identification of each licensed vehicle and its owner. The standard specifies the information which the system must contain.

There is a standard requiring local governmental subdivisions to have a program to assure that all traffic courts complement and support statewide traffic objectives. This includes a system of reporting all convictions for moving traffic violations to the State traffic records agency.

Each State is required to maintain a traffic records system which contains information on drivers, vehicles, accidents, and driving convictions, and which is capable of furnishing data, summaries, and tabulations with a minimum of delay.

Each State is required to work with local jurisdictions to develop an effective program to ensure that persons involved in highway accidents receive prompt emergency medical care. The standard prescribes first-aid training and licensing of all rescue vehicle operators, attendants, and drivers. It requires the development of criteria for the use of two-way communications systems for dispatching aid, and specifies systems for operating and coordinating ambulances and other emergency-care facilities.

It is obvious, I am sure, even from this rather sketchy recitation of the Federal standards, that they are extremely comprehensive and will affect almost every aspect of motor vehicle operation. As I have said, the implementation of these wide-ranging programs may cause some public turbulence. The success of the State programs will depend in large measure on the active support and leadership of the State governments, local community leaders, and highway user groups.

It is essential that we get across to the American public the fact that this national effort has evolved into a scientifically-oriented program based on adequate research. It is not a hit and miss proposition. The National Highway Safety Bureau of the Federal Highway Administration has the responsibility for development of both highway and motor vehicle safety standards based on research findings -- research heretofore conducted on a fragmented, unorganized basis across the country, but now being given a unifying influence by the National Highway Safety Bureau.

The third thrust for highway safety is in the construction of the highways. Ever since the beginning of highways, safety has been paramount in their design and construction.

Why, then, is it necessary to have a special thrust at this time in relation to highway geometrics and construction? My only comment to that question is that safety throughout the years has always been balanced against other desirable construction needs. Total available money controlled our total safety efforts. It would appear that we engineers who have been making the decisions on how to spend the highway dollars have not been correctly reading the minds of the people and our National Congress.

The Special Subcommittee on the Federal-aid Highway Program of the House Committee on Public Works (sometimes called the Blatnik Committee), held hearings in May, June and July of this year. The hearings inquired into certain questions bearing upon the design and operational efficiency of our highways. I would like to quote some portions of Representative Blatnik's closing statement on July 20, 1967.

"This opening phase has been principally concerned with the problem of roadside hazards. The testimony has been explicit and far-reaching. Frankly it is an incredible story. It has established beyond any doubt that, despite an available store of knowledge from research and experience, even our new roads have continued to incorporate into their design and construction deficiencies from the past. The result has been that our roadsides generally are a conglomeration of hazards that are a danger to the life and limb of the motoring public.

No rational person could be unaware that the driver, whether as an innocent victim or through errors of omission or commission, is frequently a contributing cause to the accident. As a human being and as such subject to all of the usual human failings, he is sometimes careless and frequently unpredictable.

In any case, we can safely predict that each year thousands of vehicles undoubtedly will continue to hurtle off our highways out of control, as they have done each year in the past. Reasons will range all the way from bee stings, sideswipes or blowouts to driver error or fatigue. Whatever the reason, they are entitled to a "second chance" to recover control, without being smashed against some massive concrete or steel object which in too many cases should not have been there at all.

No one can challenge the fact that thousands of the deaths and serious permanently crippling injuries result from a vehicle leaving the road and overturning or impacting an object which is without adequate protection to the motorist. Too often the object has been placed in his path by the same people who built the highway.

One of the significant problems that has been identified is a "communication gap" between those who know and those who are responsible for the design and construction of the roads. As a result of that gap, the knowledge we have gained from experience and research over the years has often been ignored in practice.

Another problem is how to overcome inertia, or resistance to change. Old designs of the type long discarded by progressive highway research and construction people as inadequate, cannot be justified on the basis that "we have always done it this way." Last year's standard plans must not be blindly relied upon for the design of next year's road.

I think one of the major changes which must take place before there can be hope of lasting improvement in this whole field of highway transportation, is a re-evaluation by highway departments of their primary mission.

The basic role of the State highway department is not to construct highways. Highway departments are, in the final analysis, in the business of operating a physical plant of highways.

If this philosophy of an operational concept can clearly be understood, it would permit one to look at the highway in a new light and more readily identify the needs of the motorists. "Operation" means just that; it is not the twin of "maintenance."

If the minds of as few as let us say 200 of the appropriate State highway department people could be imbued with the wisdom of the operational concept, the seed would be planted and could be

cultivated in the tens of thousands of minds whose efforts can result in drastic reduction of highway accidents. This should be a challenge to the personnel of the Bureau of Public Roads, AASHO and the various State highway departments; their participation in the lessening of human tragedy, grief and suffering should be exciting and gratifying.

We have the opportunity to save many lives. Inaction or delay in immediately taking full advantage of it cannot be tolerated. This matter will be closely followed by the subcommittee while in addition, during the months ahead, we continue to explore other important facets of safe highway design."

This has been a rather long quote, but I think it sets forth the interest that Congress will be taking in our efforts to make the roads safer.

You are all well aware of the "Highway Design and Operational Practices Related to Highway Safety" booklet. That booklet, commonly called the "Yellow Book," was a report of the Special AASHO Traffic Safety Committee, and it sets forth many ideas to make the highway safer. Most of the items in that book are not new, in the sense that the engineers in the past did not know of them. The truth is, though, that many of the items in that book are called new because they were not specifically spelled out in our past highway standards.

The recommendations of the "Yellow Book" have been accepted and approved by the Department of Transportation and by most highway officials. They are to be applied to the extent practicable and feasible on all future projects of the Federal-aid systems where the design speed is 50 mph or more and the current average daily traffic is 750 vehicles or more.

"Ran-off-the-road" fatal accidents have increased as the cause of freeway fatalities to approximately 65 percent of the total. Studies have indicated that about 80 percent of the vehicles involved in this type of accident came to rest within 30 feet of the edge of traveled way. The major recommendations of the "Yellow Book" are directed to the desirability of obtaining an unencumbered recovery area within this 30-foot dimension.

Embankment and cut slopes 6:1 or flatter can often be negotiated by a vehicle with some chance for recovery, and these should be provided where possible. The need for 6:1 slopes becomes especially critical within the 30-foot area. With this slope, it is possible for a car to leave

travel lanes, have the driver realize his mistake, and then stop safely or return to the through lanes. This provision, although important, is enhanced by another new provision, to eliminate all objects from the roadway cross-section within 30 feet of the travel lanes. This provision moves cut slopes back, eliminates trees and signs within this safety zone, and calls for a redesign of many drainage facilities to make them safer. The standards also state that if, for some good reason, these provisions can't be carried out, then the driver should be protected from steep slopes, objects, etc., by the use of improved guardrail standards.

A change in highway geometrics, such as I have just described, takes a long time to appear in the field, if we, as engineers, are not willing to go back and modify partially completed plans and authorized construction projects. The suggestions of the "Yellow Book" which have been adopted by the Bureau of Public Roads have been accepted by the State Highway Department, and they have agreed that wherever possible the changes that are called for in the "Yellow Book" should be accomplished on current design and construction projects. Therefore, the only quick way in which these revised geometrics can get into our highway projects is for the field construction people and designers to make the added effort to change the projects they are working on; otherwise, we will still be constructing the last project on the Interstate System in Kentucky with geometrics which are now considered substandard. The whole campaign which is now being exerted throughout the country against deaths and injuries on our highways can only be accomplished by the forceful support of highway engineers and industry of this country.

In closing, I would like to leave with you a short story which I believe will put the whole idea in perspective. There was an elderly gentleman living in the hills of Kentucky, who was known for his wise wit, although he had no formal education. The people of the area, always wishing to prove they were smarter than the elderly gentleman, were constantly playing pranks on him; but each time the elderly gentleman always outsmarted them. One day, one of the toughs of the community decided that he had a way to beat the old man. He told his friends that if he took a small bird and cupped it within his two hands the old man wouldn't know if it was alive or dead. He would then ask the old gentleman whether the bird was alive or dead, and if he alive, the tough would crush the bird and show it as dead. If the old man said dead, the tough would open his hands and let the bird fly away. Sure enough, the tough took a bird in his hands and he said to the old gentleman, "What do you think I have in my hands, a live bird or a dead bird?" The mountain sage thought for a minute, and he finally said, "Son, it's as you will."

And gentlemen, in leaving, I say to you -- highway safety is as you will have it.