



U.S. DEPARTMENT OF COMMERCE
BUREAU OF PUBLIC ROADS
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REMARKS BY F. C. TURNER, CHIEF ENGINEER, BUREAU OF PUBLIC ROADS
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ERN ASSOCIATION OF STATE HIGHWAY OFFICIALS, SUN VALLEY, IDAHO
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One of the principal topics of discussion at your last meeting here in Sun Valley 12 years ago was a proposed big highway program and how to finance it. Today, we are well along with that program, but we are still having some problems with financing it. It is significant that it continues to be the financing rather than the engineering problems that are presently controlling its overall national progress.

While I'm delving into history I should mention that when your WASHO organization was founded in 1921, the present Federal-State partnership in roadbuilding was itself only five years old. President Woodrow Wilson had signed the first Federal-aid highway act in 1916 -- now exactly a half century ago -- and even though the \$5 million in Federal funds it then provided was modest by today's standards, it set the pattern for a cooperative venture which has built and is improving the greatest highway network in the world. And despite the occasional strains and misunderstandings that beset it, just like all other partnerships, the cooperative arrangement between the Bureau of Public Roads and the State highway departments has endured to the benefit of the American public. We can celebrate with mutual pride this 50th anniversary year since the signing of the Federal-Aid Road Act of 1916 on July 11 of that historic year.

As a matter of perspective, before taking a look at the road ahead, it is sometimes helpful to take a backsight briefly at the road behind. The Bureau of Public Roads had had its origin in the Office of Road Inquiry in 1893, nearly a quarter century earlier, and its first activities were devoted to building "object lesson" roads. I mention this only because of a prophetic statement made at that time by the first Director of the Office of Road Inquiry, who was Mr. Roy Stone.

He said:

"It would greatly increase the value of the interstate roads and stimulate a general public interest in roadbuilding if some of these lines could be connected or combined as to form in a measure, a national system, such as was planned and partly built by the Government in the early days of this century. The most effective lines that could be adopted for this purpose would be an Atlantic and a Pacific Coast line, joined by a continental highway extending from Washington to San Francisco."

This goes to show that even in the highway field there's really nothing new under the sun and the concept of the Interstate System that the States are now building can be found in that statement going back to the last century. We have come a long way in roadbuilding since Mr. Stone's time, and we still have a long way to go. Progress on the greatly expanded highway program launched in 1956 has been good, but uneven between the individual States.

As of June 30, 1966, more than 21,500 miles of the Interstate System were open to and being used by traffic while construction was underway on

an additional 6,310 miles. Reports show that 53 percent of the System is already in use and that there remains only 5 percent of the work which has not yet been advanced to the preliminary engineering stages.

In the WASHO States about 7,170 of the designated 14,000 miles are open to traffic -- approximately the same percentage as the national figure, although your WASHO rate of progress in terms of miles actually built is probably better than the national record when other factors are considered. As is the case nationally, a few of the WASHO States are further advanced in Interstate work while others are lagging.

In the ABC programs, construction contracts have been completed on nearly 200,000 miles of primary and secondary highways and their urban extensions since July 1, 1956. These have cost \$15.54 billion in Federal and State funds; and as of June 30 this year contracts involving another 20,704 miles at a total cost of \$3.23 billion were underway. It should be observed that even at this rate, it would take 40 years to complete one cycle of improvement on all of the mileage included in our ABC roads.

In summary, the States placed in service 2,174 miles of Interstate highways during Fiscal 1966 and completed construction or reconstruction on another 15,000 miles of ABC roads. Surely this is tremendous progress but we have to go faster if we are to complete the Interstate System in 1972 or 1973. Some of the toughest work remains to be done and time does march on. As I stated at the beginning, however, the delaying factor is finances, and if this problem is resolved by Congress, both the States and the Bureau of Public Roads will have to do some real expediting to complete the 41,000 miles of Interstate highways on time.

I'm sure all of us are concerned about completion of the Interstate System and advancement of the other highway programs in the face of rising costs and the inexorable annual increase in traffic. The cost of highway construction in the second quarter of 1966 rose 4.3 percent above the first quarter, to 113.7 percent of the 1957-59 average. This rise followed a 2.3 percent increase during the previous quarter. In brief, the composite price index for the second quarter of this year is 6.5 percent above that for the second quarter of 1965. There is little that you or I can do about this except to recognize the likelihood that we are going to get increasingly less highway per dollar from now until the end of the Interstate construction period.

Final locations have now been pinned down on all except 1,300 miles of the Interstate System. While more than half of this is in the WASHO States we do not anticipate that much of it will be troublesome. On the other hand, there are a few real problems in connection with unresolved locations in several urban areas. In the typical urban case there is usually a six-year lead time period needed between beginning of design and the completion of an Interstate project. For this reason we should continue our best efforts to get the remaining mileage settled at the earliest possible date. In most cases, the problems and the shouting stop when a decision is made and announced.

In other important activity areas, the scenic highway study has been completed and substantial progress has also been made in the studies leading to development of a continuing Federal-aid highway program after 1972. In the summer of 1965 the States submitted to the Bureau estimated

needs of all highway systems for the period 1965-85. This material is currently being analyzed and will provide basic data on Federal-aid highway requirements for use in the numerous reports which will need to be made to Congress on future highway needs of the Nation.

I want to mention also some of the elements of our highway progress that do not lend themselves easily to quantitative measurement -- either in terms of mileage, dollars or tons of construction materials. I'm referring to the human values involved in this Federal-State program for, as you have heard more and more frequently in the last year or so, we are building roads for people, not vehicles. Since your Santa Fe meeting broad legislation has been enacted affecting highway beauty and safety which, to a very large degree, go hand in hand. You are all familiar with the Highway Beautification Act of 1965 and I won't dwell on it at length other than to say that progress has been recorded in that activity area also.

Back in May we completed the public hearings required by the Act on proposed standards for the control of outdoor advertising and junkyards. We have set up a Highway Beautification Coordinating function and have staffed its offices, both in Washington and in the field, with qualified and experienced personnel. Our reports show that the long range plans of the States call for the landscaping of about 109,000 miles of roadsides, the screening of almost 12,000 unsightly areas, and the development of nearly 6,400 rest and recreation areas.

Both the Bureau and the State highway departments may take pride in this greatly expanded highway beautification effort. It is true that

esthetics has always been an objective of enlightened highway engineers. As early as 1932, a joint committee composed of eight members from the Highway Research Board and AASHO issued this statement:

"Roadside development must conserve, enhance, and effectively display the natural beauty of the landscape through which the highway passes, as well as provide safety, utility, economy, and recreation facilities by proper location, construction and maintenance of highways."

AASHD first established its Roadside Development Committee in 1956 and its current enlightened Policy on Roadside Development was adopted in 1961. The trouble was that we didn't have the public and official support necessary to implement some of the beautification ideas until President Johnson got behind them. The public and official mood has now changed and funds have been provided to the extent that we can do some of the things that we have always wanted to do.

And so, we can all join hands in complimenting ourselves on a job well done as we reflectively examine our handiwork since last year's meeting. Similar satisfaction can properly be taken also in a look back to 1954, or 1916, or even to 1893. But we cannot afford to rest our efforts until we have eliminated every hazard on our roads which can in any way contribute to death and injury to our citizens. We've done much in this direction, but we cannot call for a final inspection on this job right now; there is still too much work to be done.

In my opinion, the greatest challenge facing the highway engineer today is to build safety into the new highways and to remove the accident hazards which exist on the old ones. It has become a cliché to say that our traffic

accident and death toll have become a national disgrace, a modern American tragedy of awesome dimensions. It is all of that and more too. While highway accidents and deaths stem from many causes, it is clearly our responsibility as highway engineers to provide the safest, most foolproof riding surface and roadway that is possible within our money availability. To do any less is an abdication of our responsibility.

With annual traffic deaths at the 50,000 mark, we in the highway field must employ every resource at our command to save every individual life that it is within our power so to do. Our fatality rate has been edging up from a low of 5.2 per 100 million vehicle miles of travel in 1961 to 5.57 last year. (I might interject here that the rate in the WASHO States in 1965 was even higher -- 6.09 deaths per 100 million miles.) There is very little comfort in the fact that if the national rate for the calendar year 1925 - 17.5 -- had continued, we would have had 150,000 traffic deaths last year. We cannot be satisfied with a low "rate" alone, -- it must be the very "lowest" that our ingenuity, money, and tools can possibly attain.

How do we go about an action program that does something about the horrible accident problem? Each of us, of course, has his own pet solution and all contributions are welcome and needed. But there is no time now for just talks on a philosophical basis - the so-called Baldwin amendment enacted into law last year put the responsibility for action on us - by January of 1968.

The House Public Works Committee, in its recent report on the safety bill, recites a number of suggested ways to enhance safety and I would like to take a minute to quote from the report: "We can require," it said,

"that all new construction and reconstruction, regardless of where it is, be built to no less than Federal-aid primary design standards, even if this does mean building fewer miles, and we can require that those primary geometric design standards be substantially raised.

"We can require wider rights-of-way; flatter slopes; broad, even shoulders; less severe curves; removal of all obstructions of all kinds from the right-of-way; the installation of traffic controls at intersections; and the inclusion of turnout or slow lanes in all mountainous or other limited visibility areas.

"We can require that median barriers and guardrails be constructed of impact absorption materials that return cars with the least possible damage to positions parallel to traffic, and we can require that this be done immediately. We can also start replacing the present impact-dangerous barriers and guardrails with the improved types.

"We can require that maintenance standards and practices be high enough to keep highways up to original construction standards."

A little further on the report said:

"The Committee expects that the Bureau of Public Roads will seriously consider, encourage, and test imaginative efforts, no matter who suggests them, to improve highway technology. The Committee believes that both the Bureau and the State highway departments have been less responsive to innovation than they can and should be. We realize that it is a human tendency to cling to the familiar, but the familiar (even when it seems cheaper) happens to be costing us thousands of lives and millions of dollars in property damage. We also realize that in the process of being willing to try new ideas, a lot of failures will come and go, but if a receptive,

imaginative approach results in even one good new accident prevention standard or procedure, it will have more than justified the cost and the frustrations of all the ideas that didn't work."

We all recognize that the controlled access freeway type of design can make the largest safety contribution, we all know also that the Interstate highways make up only about 1 percent of the Nation's roads and streets and will carry less than 1/4 of the traffic. It follows then that we must take whatever steps are possible to make our other roads into safer roads for motorists at the fastest possible rate. This is being done in substantial ways but I hope and trust that we can do even more.

We must eliminate hazards in the road itself and this is being done through the so-called spot improvement program to rid the Federal-aid systems of accident-inducing features. This program has been underway since March, 1964, with encouraging success. Since then the States have programed more than 1600 spot improvement projects at a total estimated cost of about \$300 million, including about \$140 million of Federal funds. While the Bureau is pleased with this effort and we believe that the months ahead will show the wisdom of this approach through fewer accidents, deaths and injuries at these locations, we have an obligation to plan our work so that all of those high hazard conditions will have been corrected by 1969. Such a goal requires a several-fold increase in the amount of our resources being put into this effort.

One of the most important of our safety efforts must be the elimination of accident hazards along the roadside and right-of-way. Every day we read about a vehicle which ran off the pavement, wrapped itself around a tree or other object too close to the road, and killed or injured its occupants. This

type of accident is repeated all too often and we must systematically go about preventing it because it is a job that is ours - not someone else's. The Bureau has issued several recent memoranda on this subject and I would like to refer to the latest, an Instructional Memorandum dated August 1, 1966.

The Memorandum urges action on four major objectives:

First is the provision of a roadside as clear and as safe as is feasible for any vehicle that may leave the road surface. In addition to what can be accomplished by use of flat slopes, the elimination of all unnecessary sign supports, light standards, drainage structure obstructions, and other appurtenances should be sought.

Second, where sign and lighting supports and other roadside appurtenances are necessary, they should be so located (longitudinal and lateral) as to create the least practicable hazard. Necessity for placement of each item must be carefully evaluated against the hazard it may create by its presence in the roadway.

Third, supports and appurtenances which cannot be eliminated or relocated should be so designed as to inflict minimum damage to highway users when and if they are struck by vehicles out of control.

Fourth, where supports and appurtenances are necessarily of a design that is massive and unyielding, and these cannot be eliminated or relocated so that they are unlikely to be struck, appropriate guard rail installations or a protective energy absorbing device should be considered for the protection of highway users.

While this Memorandum deals mainly with signs and lighting supports, as specific illustrations, there is urgent need for an "Operation Clean

Sweep" -- to rid the entire roadside of all but the most essential structures that may kill and maim, such, for example, as lighting poles, catch basins, curbs, bridge abutments and piers, and some of the ends of our guard rails and bridge railing turnouts which -- ironically enough -- may themselves cause death rather than prevent it. We must also get more uniformity in such fields as signing, signals, and markings so that we don't confuse the motorist and thereby create another accident hazard.

Paralleling this program is the work now under way by the AASHO Special Committee on Traffic Safety. Because of the urgency of the highway safety problem it was considered desirable to go ahead and issue the Bureau's memorandum without waiting for the final report of the Special Committee's Study. Additions or revisions dictated by the results of the AASHO study will be made as soon as they become available.

Obviously these efforts I have mentioned will not eliminate all accidents and highway fatalities, because a large number will continue to occur primarily from reasons associated with the driver or the vehicle or a combination of causes. In most accidents there is more than just one factor involved.

The death of John Q. Citizen is due to many elements -- drinking, sleeping, inattention, speeding, overdriving, the plain misfortune of having the unexpected happen, defective equipment, and many others. While the highway engineer is not responsible for most of these factors he must be sure that the factors for which he is responsible have been minimized.

We as highway officials must do whatever we can to protect drivers from themselves -- or others. We must make our highway designs in such a

way as to compensate for and neutralize the existing driver's mistake -- so that that error will not be anything more than a driving error, if at all possible to do so. In short, we must eliminate the physical boobytraps, built into the roadway itself. The overall problem is being attacked from many directions -- legislation, education, enforcement, engineering, research.

The so-called "nut behind the wheel" has received much of the blame for highway accidents and I feel that in the majority of cases, he deserves the criticism. Many critics have generalized that the irresponsible driver is the sole cause of traffic mishaps and that if he could be persuaded or forced to drive carefully, the accident toll would drop. He has been warned, cajoled and berated, with less than satisfactory results; nonetheless, this part of the safety effort must continue for there is no doubt that better driving is the one single improvement which can cause a noticeable drop in the toll. While we don't have enough information on the drinking driver, what we do have confirms over and over again that alcohol is involved in more than half of our fatalities. Legislation now approved by the Congress calls for a study of the role of a alcohol in accidents and fatalities. Until we are ready as a society to recognize alcohol's dominant place in this horrible highway slaughter, we are just politely blinding ourselves to the real cause and source of the problem.

There is very little the highway engineer can do about most of these problems -- the frequent human weakness and error, occasional defective vehicles, hazardous weather conditions, generally lax enforcement of traffic laws -- but as highway people we should concentrate on our own field of special competency and direct responsibility and put our own house in perfect order.

Today's highway engineer, in rebuilding the Nation's highway network, is facing his greatest challenge -- and his greatest opportunity. It is no exaggeration to say that he is building a monument both to his ingenuity and to his vision. If he builds it right, it will be a lasting tribute to his work. If he doesn't, if he perpetuates his errors of judgment -- or his indifference -- in steel and concrete, coming generations will blame his shortsightedness so that the reputation of all those in our profession will suffer accordingly.

Let's take advantage of this once-in-a-lifetime opportunity and make our highways useful, beautiful and -- most of all -- safe.