

**U.S. DEPARTMENT OF TRANSPORTATION**  
**FEDERAL HIGHWAY ADMINISTRATION**  
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HIGHWAY FUNCTIONS AND SYSTEM DEVELOPMENT

Remarks by Francis C. Turner, Director of Public Roads, Federal Highway Administration, U. S. Department of Transportation, prepared for delivery at the 47th Annual Conference of the Western Association of State Highway Officials, Cheyenne, Wyoming, September 17, 1968.

I am pleased to be with you again. The planners of this 47th Annual WASHO Conference probably didn't realize how timely the scheduling of your meeting would turn out to be.

As it happens, this Conference follows quickly on the enactment of another significant milestone in the development of the Federal-aid highway program and in the history of the Federal-State partnership in the building of roads. The Federal-aid Highway Act of 1968 is certainly a far-reaching as well as a controversial piece of legislation and its fate was a cliff-hanger up to the last moment.

As you know, even the Department of Transportation and the State highway departments were in the unusual position of opposing one portion of the bill -- that which added mileage to the Interstate System. And they were joined in this opposition by the city and county associations. But looking at the whole scenario, rather than at a few parts which may not have been written to our specifications, the total effect is good.

I am not going to try to cover all of the provisions and implications of the Act today -- partly because they are too numerous and complex for a brief talk, but mainly because they are and will be the subjects of various formal memoranda and correspondence between the Bureau of Public Roads and the State highway departments.

I made specific mention of the addition of mileage to the Interstate System because it relates directly to the subject I want to talk about briefly this afternoon. At the time the 1968 Act was being hammered out by the Senate and House conferees, we questioned the desirability of adding Interstate mileage at this time for various reasons, stemming principally from another provision in the same Act. This requires the Department of Transportation to make a study of the Nation's entire highway network and to classify our roads and streets in accordance with the service they perform. This functional classification study is important, if not basic, to intelligent decisions on how to allocate spending among various types of roads, including major arterial streets.

Functional highway classification is by no means new although the term is much newer than the activity. The ancient Romans used a crude form of classification in the development of their 50,000-mile road network. Several thousand miles were surfaced with stone slabs; the other mileage was either lightly surfaced or not surfaced at all. The decision was based on the proposed use of the road -- whether predominantly for military or civilian purposes, the latter including trade, travel and courier service.

In our own country and time the classification of highways evolved from the pioneer Federal-aid Road Act of 1916, which established the basic Federal-State cooperative partnership. It also was a natural outgrowth of the Federal government's interest in highways, which stems from its constitutional directive to establish post roads, regulate commerce among the States, provide for the national defense and promote the general welfare.

The classification procedure received its great initial impetus in the United States with the Federal-aid Highway Act of 1921. This limited the use of Federal-aid funds to a system of main roads chosen by each State, and not to exceed 7 percent of the total State mileage at the time. The result was the primary system, or the Nation's main network of the most essential roads.

I don't propose to give an exercise in history today but I do believe some background is helpful to an appreciation of this new assignment which Congress and the President have given us in the field of highway classification. And along the way I hope to show that this assignment is the logical next step in the evolution of the Federal-State partnership over the years.

One of the significant breakthroughs in this evolution was the Hayden-Cartwright Act of 1934, which charted some new directions for the Federal-aid program. It required 25 percent of Federal highway funds to be expended on secondary roads -- farm-to-market, mail and school bus routes. Of much greater long range importance, it authorized the use of 1 1/2 percent of available Federal-aid funds for planning future work -- in other words, developing an intelligent highway program on the basis of scientific road inventories, traffic surveys and financial and road-use studies.

By the close of fiscal 1936, some 40 States had indicated their desire to undertake such planning surveys and 31 States had already begun work on them. In its annual report for that year the Bureau made a statement which is just as applicable today as it was 32 years ago. It said:

"It should be recognized at this time that highway operations must be continuous and must be predicated on the service of highway transportation. Programs of highway improvement should be formulated on the basis of definite knowledge of need. The people of the country must be fully informed of the costs -- not only present but future and continuing costs of work to be done from year to year. Recognizing the importance of these matters, the Bureau has urged upon all States the importance of conducting highway planning surveys embracing the entire rural highway mileage and going into all matters that may have bearing upon its improvement."

The surveys were conducted by the State highway departments according to a general plan adopted by the Bureau since there was recognition of the necessity that data collected in the various States be on a comparable basis. These Statewide highway planning surveys have produced a continuing supply of data on roads and their uses -- data which have served as a scientific, factual foundation for highway planning during the past three decades.

The research and planning studies led to two landmark reports which, in turn, laid the foundation for the Interstate System. These were Toll Roads and Free Roads, submitted to Congress in 1939, and Interregional Highways, presented in 1944. For the first time, the findings of the research and planning surveys were spelled out in detail -- that the most urgent highway needs were not only improvement of the principal routes connecting the larger centers of population, but relief from growing urban congestion on main routes approaching and running through cities.

In response to the growing urbanization of the Nation, the Federal-aid Highway Act of 1944 earmarked funds for the urban portions of the primary system for the first time. The Act also authorized the designation of a secondary system, and the use of Federal-aid funds was extended to include costs of right-of-way and engineering plans and surveys. Since 1944 the annual Federal highway funds authorized for the so-called "regular" or ABC program (excluding Interstate) have been divided into 45 percent for the primary system, 30 percent for the secondary system, and 25 percent for urban projects.

Possibly the most important provision of the 1944 legislation, in the light of subsequent events, was the Congressional authorization of the National System of Interstate Highways, as it was then called. This was a direct outgrowth of the reports mentioned earlier, and while no special provision was made for its financing, the concept blazed a new trail in the development of the Federal-aid highway program.

The stage was thus set for the greatly-expanded and intelligently oriented Federal-aid highway program that was launched in 1956. This program was solidly rooted in the highway planning surveys and took into account not only traffic increases, but the gravitation of people to the cities and the social and economic problems this movement created. During the '60's Federal policy has been strengthened to promote greater harmony between the highway and its surroundings, notably in the Act of 1962. This required, as you know, that urban highway plans in cities of 50,000 population be developed as part of a cooperative, comprehensive and continuing urban transportation

planning process, including coordination with plans for other modes of transportation and for local land development, and with greater participation in planning by local government.

In other words the developing trend has been to plan, design and construct highways as general instruments of social progress in addition to their basic function of moving people and goods. This trend has been continued and strengthened in the Federal-aid Highway Act of 1968, particularly in those sections dealing with property acquisition and highway relocation assistance.

I want to make one more incursion into history before going on to the future because there is a widespread impression, I'm afraid, that the traditional modus operandi of highway engineers and officials has not been concerned with anything except lowest cost and the shortest distance between two points. In doing a little research for this talk and other purposes, I came across some quotations which may be of interest in this context.

In its annual report for 1939, for instance, the Bureau of Public Roads had this to say:

"In determining the extent to which highway transportation is economically sound and defensible, it cannot be considered apart from other modes or kinds of transport. The transportation problem as a whole must be carefully studied, utilizing such materials as are available from other official sources, the results of the highway planning surveys, and other special studies and analyses."

In its annual report for 1947, the Bureau said:

"During the war years and during the past year the traffic needs of many cities were studied and preliminary engineering reports prepared showing

the manner in which these needs can be satisfied. In each case the city was studied in all of its communal aspects so that the proposed improvements would not only relieve traffic congestion but aid in the orderly development of the city itself. Public Roads has assisted in this work by approving the use of Federal funds to aid in financing and by assigning engineers with broad experience in this special field to consult with engineers of the State highway departments and the cities."

These observations about highway functions and system development indicate several things: First, that there is really very little new under the sun; second, that the Federal-aid highway program has never progressed by revolution, but by painstaking evolution in accordance with the needs of the times; and third, that these statements which I have quoted are even more applicable today than when written 20 and 30 years ago. They are especially valid in view of the functional highway classification study which Congress has directed the Secretary of Transportation to make in cooperation with the State highway departments and local governments.

In the language of the statute, the study should pay "particular attention to the establishment of highway system categories, rural and urban, according to the functional importance of routes, desirable as one of the bases for realigning Federal highway programs to better meet future needs and priorities." The results of this study will be reported as part of the second highway needs study to be submitted to Congress in January 1970 under provisions of the Federal-aid Highway Act of 1965.

I know there is a tendency among all of us to consider such a study to be a time-consuming and enervating chore. It may be that, but it also is a golden opportunity. It is another step in a long procession of steps, some of which I have mentioned, to keep the Federal-aid highway program in pace with current and changing needs in an expanding and changing society.

We have a new invitation from Congress to recommend the size and shape and form of the future highway program in accordance with our best estimates of needs; "to call them as we see them" as we used to say, or "to tell it like it is" as they say today. This will be the first functional highway classification study undertaken on a national scale and its results are certain to have profound effects on future highway development and on the allocation of Federal funds among the various classes of highways.

Some of the spade work for this particular study has already been done by the Bureau and the State highway departments in the 1968 National Highway Needs Report, which was submitted to Congress early this year. That report, you will remember, was in the nature of a fact-finding or analytical study but it did suggest some broad areas for exploration and some logical approaches to meeting the Nation's highway needs during the period 1973-85. In fact it suggested that the most important key to meeting these needs lay in an objective nationwide highway classification study for use in redefining the Federal-aid highway systems -- as well as other roads and streets -- in each State.

This is the study just mandated by Congress and the one in which we are about to enlist your help. There will be formal requests in the near future and we will ask you to develop functional classification plans based on requirements of the year 1968 and possibly for those assumed for 1990.



The study is expected to be completed next summer, in time for incorporation into the next highway needs study to be submitted to Congress in January 1970.

It is anticipated that the study will classify all roads and streets by their functional use -- for example, by arterials, collectors, and local roads. It will suggest changes needed in the Federal-aid systems to allow maximum transportation benefits from the investments in highways. It will permit us to identify "soft spots" in the Federal-aid systems, that is, to (a) determine whether some existing Federal-aid roads should not be on a Federal-aid system or should be placed on a system of lower classification; and (b) identify present non-Federal aid roads which possibly should be on one of the Federal-aid systems.

This process would logically involve a full exploration of the desirability of creating new Federal-aid systems, including those mentioned as possibilities in the 1968 National Highway Needs Report. That study, for instance, considered in detail the question of extending the authorized length of the Interstate System. However, most of the routes considered for inclusion were found in the preliminary analysis to be of lesser Federal interest than the presently authorized Interstate routes. The majority of those considered, for example, were contained within a single State or traversed only one or two States. The study raised the possibility, therefore, of an intermediate system, comprising those routes of lesser importance than the Interstate System. It was suggested that the construction standards for such a system might be less than those of the Interstate System although the control-of-access principle was considered appropriate for the whole of such an intermediate system.

Quite logically, in view of continuing population trends, the study will be heavily oriented to the metropolitan complexes. It undoubtedly will consider an expansion of the Federal-aid systems in urban areas to include all major arterial streets and highways. These might logically divide into two categories: one would be the urban penetrations of the rural intercity routes and their major distributors; the other could comprise the routes of local areawide importance, which collectively might be called the Federal-aid metropolitan system or some similarly descriptive term.

Faced with constantly changing conditions, it is time to look into other criteria for selecting routes to be added to the Federal-aid systems in addition to those used in the past. Aside from considerations of interstate commerce and inter-city movements of passenger and commercial vehicles, we need to place greater emphasis on providing highways to enhance the general welfare, particularly in urban areas. In adding this emphasis on social considerations, however, we must never lose sight of the principal purpose of all highways or other modes of transportation -- which is to move people and goods efficiently and safely.

Tied in with the broader study of which the classification study is a part are possible changes in the methods of apportionment of Federal-aid funds, bringing into play such factors as motor vehicle registrations, vehicle miles of travel and mileages related to functional classifications. Some preliminary investigation of such possible changes has already been made, but since they would involve a fundamental alteration of Federal-aid policy, a great deal more study is needed.

The classification study will be followed by two related studies. One will be an estimate of cost of needed improvements on each of the functional systems. The other will deal with highway user benefits that will flow from such improvements, including reductions in accident costs, travel time, vehicle operating costs and maintenance expenses, as well as increased capacity. Studies of estimated costs and benefits of highway improvements have been made time and time again, but never before has there been a comprehensive effort to quantify benefits on a system-wide basis.

The needs and benefits studies will supply the data for the 1972 Highway Needs Study, which in turn will form the basis for recommendations to Congress on the type and size of the program needed to meet future highway needs and on the form and extent of future highway systems.

We are thus embarking -- from one point of view -- on another project of an importance to the highway program comparable with those landmark studies produced in the past through the cooperative efforts of the Bureau and the State highway departments. From another point of view, we are merely continuing to advance studies undertaken more than a half century ago -- to build on the foundation laid in the Federal-Aid Road Act of 1916.

That is the important point, I think. Federal-aid for highways has grown from the \$5 million authorized in the 1916 Act to about \$4.8 billion authorized for the current fiscal year. It has increased from about 9 percent of all capital outlay for highways in 1921 to more than half of the capital outlay today. But despite this increasingly dominant financial

role of the Federal government, Congress has wisely continued the Federal-State partnership arrangement which has given us the great highway network that we have today and are building for the future.

I hope that all three branches of the Federal government -- the legislative, the executive, and the judicial to the extent that it is involved -- will continue to respect and continue to rely upon that partnership for highway progress in the years ahead.

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