

THE NATIONAL SYSTEM OF INTERSTATE HIGHWAYS

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When the Congress directed the designation of a National System of Interstate Highways in the Federal-Aid Highway Act of 1944, a time cycle of one and one-half centuries had elapsed since the recognition of the national significance of major interstate highway routes. In this period governmental interest completed the circle from Federal responsibility through many and varied stages of local and State control, to the present legal specification of a system of interstate highways so located as to connect by routes as direct as practicable the principal metropolitan areas and industrial centers, to serve the national defense, and to connect at suitable border points with routes of continental importance in the Dominion of Canada and the Republic of Mexico.

Mileage of Interstate System

The National Interstate System as now designated by the State highway departments in cooperation with Federal authorities comprises 37,800 miles of main thoroughfares—31,831 miles in rural areas and 5,969 miles in urban areas. Approximately 2,200 miles of the 40,000 miles authorized for the system have been reserved for connections through cities and circumferential routes around them.

Although the system includes only one percent plus of the country's total mileage of roads and streets, its rural sections, if adequately improved, would serve more than 21 percent of the traffic carried by all rural roads. Its urban sections as thus far designated would serve more than 10 percent of the traffic moving over all city streets.

All but 1,900 miles of the 31,831 miles of the system in rural areas require improvement to bring these routes up to standards recommended for existing volumes of traffic. Of the 5,969 miles of roads and streets in urban areas, all but 398 miles require some degree of improvement. Of the 10,050 bridges on rural sections of the system, only 483 are completely adequate.

Relation of System to Traffic and to Population

On its rural sections the system served in 1948 a traffic averaging 2,915 vehicles per day. The traffic served, however, varied from a minimum of less than 200 vehicles per day on a few sections to more than 70,000 vehicles per day on one section. There were 359 miles that carried less than 400 vehicles per day, but there were 437 miles that served an average of more than 20,000 vehicles per day, and 14,892 miles—nearly half of the rural mileage—served more than 3,000 vehicles per day.

The designated system connects directly all cities of 250,000 population or more, and all but six of cities of 100,000 population

or more. Of the 107 cities of between 50 and 100 thousand, 69 lie directly on the system, and similarly located are 2,538 other cities, towns, and urban places.

Of the total of 83,766,000 classified as urban population by the 1940 census, 54,378,000, or 65 percent, was in the cities lying directly on the Interstate System; and in the 1,160 counties traversed by the system—just over a third of all counties—there was a rural population of 23,953,000, or 50 percent of the 1940 rural population.

The population, urban and rural, residing thus closely to the system, in 1940 was over 78 million or 60 percent of the total of our 1940 population.

Estimated Cost of Improvement

Routes in the Interstate System are most deficient in sight distance and in the width of pavements, shoulders, and bridges. On the basis of construction costs in 1948, the cost of improvements to correct these deficiencies and to adapt the system to existing traffic needs is estimated at \$11,266,000,000. Of this sum, approximately \$5,293,000, would be expended on sections of the system within the urban areas of cities having 5,000 or more population, and \$5,973,000,000 on rural sections of the system.

If routes in the Interstate System are to be brought to a state of adequacy in a period no longer than 20 years, a capital investment averaging probably more than \$500,000,000 a year will be required.

Capital requirements of such magnitude obviously cannot be met from the annual revenues at their present levels. The improvements are needed now. Deferral means the acceptance of greater costs in lives, in inconvenience, and in the actual expense of vehicle operation.

Completion of proposed improvements on the Interstate System in a period far shorter than 20 years would result in much greater economic and social benefits. The needs of the national defense require a substantially more rapid improvement.

Public dissatisfaction over highway inadequacies, traffic congestion, and accidents has prompted a marked increase in the planning and construction of major highway facilities, both rural and urban, that will form links in the Interstate System. During the past two years, progress in initiating and planning wide and safe rural highways and urban expressways has been at a greater rate than ever before.

Current Improvement Program

As of October 1, \$1,185,247,765 of the primary and urban funds authorized by the Federal-Aid Highway Acts of 1944 and 1948 had been assigned to programmed projects. Of this total, \$362,352,522, or nearly 31 percent, was for Interstate System improvements having an estimated total cost of \$792,771,000. These improvements included 3,943 miles of highways—nearly 9.6 percent of the total mileage in the system. Projects for which plans were approved included 1,092 bridges and 129 railway-highway grade crossing eliminations.

Urban Arterial Routes

Improvement of main urban arteries was greatly accelerated during the past year. In large cities in every part of the country major projects to eliminate traffic congestion passed from preparatory stages to active construction. Important projects have been completed and the service they are rendering is spectacular. The first 3.6-mile section of the Gulf Freeway in Houston, Texas, has been in service just over one year. When opened the traffic was 28,000 vehicles per day. Now it has reached the 50,000-vehicles-per-day mark, and is yet climbing. In an estimated 50-million-vehicle-miles of traffic service the first year there has been one traffic death. This is only one of the new values already secured. There are indicated trends of land use and values that hold promise of sound urban development with the preservation of existing property values at the heart of the business districts.

The Federal policy of aiding the cities in solving their traffic difficulties, adopted in 1944, and the increased State participation in urban highway work, give strong reinforcement to the efforts of the cities themselves. By comparison with what was accomplished in prewar years, the volume of work on city expressways and arterial routes that will form part of the Interstate System is impressive.

However, any feeling of satisfaction with the present rate of progress, or thought that traffic troubles on main urban routes will be removed in a few years, vanishes when one compares what needs to be done with the rate at which work is being completed.

Within urban areas as defined by the 1944 Act, some 3,500 miles of the system need improvements at a cost in excess of \$5,000,000,000. Construction will have to be stepped up to a much faster pace if these most needed urban improvements are to be completed within a reasonable period of years.

While the total cost of making urban improvements is large, the price that will have to be paid per mile of vehicle travel is small in comparison with the cost of tolerating the present congestion and delay.

If the vehicles using urban sections of the Interstate System paid only 1-1/3 cents per mile of travel over a 20-year period, this would be sufficient to provide the highest type of modern highway facilities. This estimate is based upon the 1948 volume of traffic. Considering the volume of traffic that is likely to develop in the next few years, it is probable that little more than one cent per mile of traffic would be sufficient.

The capital investment to provide freeways or, as some prefer, expressways, measured in terms of per-vehicle-per-day, is less than the cost for many even so-called low-cost secondary roads measured by the same yardstick.

A Review of Federal Participation in Road Improvement

The preceding factual statement of the Interstate Highway System provides a meager yardstick for measuring the true significance of the system.

As stated above, nearly one and one-half centuries have passed since recognition was given by the Federal Government to the national importance of the major interstate routes. After the Revolutionary War the need for highway transportation to promote the development of the country was clearly recognized. Since the new States and their local governing agencies were not financially able to assume the burden of building overland routes, the Federal Government undertook the task.

Prior to 1800 the territory adjacent to the Ohio River was opened to settlement, and the pioneers with their scanty household belongings thronged the trails across the Appalachian Mountains into the new "northwest" country. By 1800 the most important westward line of travel had become well defined, and in 1806 Congress appropriated funds for its improvement.

This was the first Federal road construction. The road was known as the National Pike. It extended from Cumberland, Maryland, across the Appalachian Mountains to Wheeling, then in Virginia. It was later projected and partly built westward through the State capitals of Ohio, Indiana and Illinois, to St. Louis, on the Mississippi River. Today this road is a section of U S 40, an outstanding east-west trans-continental route. No one can question the value of this Federal undertaking to the growing Nation.

Federal roadbuilding activities lapsed when the newly built railroads appeared to be the solution for long-distance traffic and the means of unbelievably fast transportation. Federal assistance was extended to railroad builders, but Federal participation in the construction of highways was not resumed until 1912 when Congress

appropriated \$500,000 to be expended by the Secretary of Agriculture, in cooperation with the Postmaster General, to aid in the improvement of post roads in rural areas.

This initial experiment in Federal-State cooperation in the construction of roads laid the ground work for the 1916 legislative Act, which provided a well-balanced plan of administration.

The Federal Highway Act of 1921 retained the important principles of the earlier act and added the important requirement that Federal highway authorities and the State highway departments should jointly designate a system of main rural roads upon which all future Federal appropriations would be expended.

These two legislative acts marked the emergence of our present primary Federal-aid system and established the general pattern of Federal assistance to the States in road construction. Basic principles embodied in the two acts have been retained in all subsequent Federal highway legislation.

The more important routes in State highway systems that had been improved prior to 1921 were incorporated in the Federal-aid system. As a result of the Federal action, the position of the States in the improvement of main highways was materially strengthened. Provision of Federal funds for work on a designated system of roads encouraged the States to undertake a program of highway improvements on a scale that would not have been possible without Federal assistance, and with a degree of uniformity throughout the Nation that could not have been obtained otherwise.

Since 1921 every route in the Federal-aid primary system, which now comprises approximately 232,000 miles of main highways, has been greatly improved. Many sections of these routes have been reconstructed repeatedly through the years to accommodate steadily increasing volumes of traffic. That many of the highways constructed before the recent World War are obsolescent today is because of a fantastic increase in total traffic and higher speeds. The main routes particularly have been seriously depreciated by overloading and repetitive heavy loading.

Adoption of the interregional highway plan is, in effect, a major reorientation of our highway program. However, except as to size of undertaking, it does not constitute a departure from basic governmental policies successfully applied on a small scale in our early history, and on an expanding scale since the beginning of the modern period of road building, initiated by the Federal-aid Road Act of 1916 and the Federal Highway Act of 1921.

Finally, the relation of the Interstate System to the national defense is indicated by the following excerpt from the report of the Secretary of Defense: "The National Military Establishment considers a relatively small 'connected system of highways interstate in character,' constructed to the highest practical uniform design standards, essential to the national defense. Because of the time required, and cost, such a system must be planned for and constructed during peacetime."