

HIGHWAYS AND MOTOR ROADS

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CONSTRUCTION

Mileage of Roads. - The total mileage of highways in the United States on January 1, 1926, according to statistics compiled by the Bureau of Public Roads from reports received from the several State highway departments, was 3,001,525 miles, of which 270,654 miles are included in the systems of State highways designated for improvement under the supervision of the State highway departments. The balance of 2,31,171 miles consists of rural roads of local importance mainly, supervision over which is vested in the county and township authorities.

Mileage Improved. - On the same date 145,509 miles of the State highways were improved with some form of surfacing; 32,218 miles were graded and drained as the first stage of an improvement which will be completed by surfacing as traffic demands and funds for the purpose become available. The balance of 92,926 miles of the State highway systems was partially graded and generally unimproved earth road.

The rural roads under the supervision of the local authorities, at the beginning of the year 1926 included 376,406 miles of surfaced road, 243,440 miles of unsurfaced earth roads improved by grading and draining in accordance with engineering standards, and 2,111,326 miles of unimproved earth roads.

The character of the improvement of the roads of the two classes at the beginning of the year is indicated by the following table which gives the mileage of the several types of surfacing.

Type of Surfacing	State Highways	Local Roads	Total
	Miles	Miles	Miles
Sand-clay	12,676.6	58,210.5	70,887.1
Gravel	64,408.0	222,511.9	286,919.9
Waterbound macadam	4,804.3	51,448.2	56,252.5
Surface-treated macadam and gravel	15,857.3	15,679.6	31,537.4
Bituminous macadam	10,984.6	10,489.6	21,474.2
Bituminous concrete	4,821.3	3,420.4	8,241.7
Sheet asphalt	838.9	1,921.5	2,760.4
Portland cement concrete	27,674.9	10,106.3	37,981.2
Brick	3,111.3	1,520.0	4,931.3
Wood, asphalt and stone block	131.2	239.1	370.3
Miscellaneous		558.9	558.9
Total	145,508.9	376,406.0	521,914.9

Annual Gain. - During 1925, a total of 41,903 miles were surfaced by all States and counties, of which 17,836 miles were on the State highway systems. The mileage built to established grade and drained by the States and counties was 15,797 miles; by the State highway departments alone the mileage so improved was 5,316 miles. The total mileage improved to some degree during the year was 73,775 miles. This mileage includes that improved under the immediate supervision of the State highway departments with Federal aid.

Records of the mileage improved during 1926 are not yet available; but judging from the mileage of Federal-aid roads constructed during the fiscal year ending June 30, 1926, the accomplishment of 1926 has been nearly as great as that of the preceding year. The 11,329 miles of Federal-aid roads completed during the fiscal year ending June 30, 1925

established a record for the cooperating Federal and State Governments, exceeding by more than a thousand miles the largest previous years performance, that of 1922. It is interesting to note that the 10,610 miles of Federal-aid roads constructed within the last fiscal year ending June 30, 1926, are only 719 miles less than the high record of 1925.

The Federal-aid road construction work of the fiscal year 1926 brings the total mileage completed since the passage of the first Federal-aid road act in 1916 up to 55,903 miles; and, in addition to the mileage completed, a great deal of work had been done on the 10,962 miles which at the close of the fiscal year were under construction. This is indicated by the fact that 2,166 miles were completed between the end of the fiscal year on June 30 and October 1. With the addition of this mileage recently completed the result of the cooperative work to October 1 is the completion of more than 58,000 miles of highway. If the separate sections of highway represented by this mileage were placed end to end, the continuous length would encircle the earth at the equator nearly 2-1/3 times.

FEDERAL AND STATE AID

The Federal-Aid Highway System. - The Federal-aid highway system designated by the several State highway departments and approved by the Secretary of Agriculture in accordance with the Federal highway act of 1921 includes at present 182,135 miles. The limiting mileage prescribed by the law and ultimately to be included in the system is 7 per cent of the total mileage of highways on record in the United States at the time of the passage of the law. This limiting mileage is 200,349 miles.

On September 30, as indicated above, 58,000 miles of this system had been constructed either as some form of surfaced highway or as graded and drained roadbeds preparatory to further improvement. On the same date 14,699 miles were under construction with Federal aid and 1,998 miles had been approved for construction by the Secretary of Agriculture. Practically all of this mileage is on the Federal-aid system, there being only a small mileage constructed prior to 1921 which is not included. Up to this date, therefore, a mileage equivalent to approximately one-third of the limiting mileage of the system has already been constructed or undertaken for improvement.

State Highway Departments Without Federal Aid. - In this category had been constructed or undertaken up to January 1, 1925, approximately 65,000 miles. It is estimated that up to July 1, 1926 this mileage has been increased to 75,000 miles. This added to the mileage improved with Federal assistance indicates that the initial improvement of the system is approximately three-quarters completed. It must be borne in mind, however, that the improvement to date includes a considerable mileage of roads which have been only graded and drained and an additional mileage improved with low types of surfaces such as sand-clay and gravel. It will be necessary to add to these roads as traffic increases surfaces adequate to withstand the loads which ultimately will be carried by these roads - the most important in the country. It will also be necessary, as funds become available, to eliminate grade crossings and replace existing temporary bridges with structures of durable design. Because of the pressing demand for the extension of improved mileage this necessary work is, in some cases, being held in abeyance.

FINANCE

Revenues and Expenditures. - Reports of revenue collected and expenditures made for highways by the States and counties during 1925 are not yet available. In 1925, the total State revenues were \$664,424,571, of which \$21,489,004 accrued from the taxation of property, \$141,402,022 from bond issues, \$199,845,165 from motor vehicle license fees, \$89,328,340 from gasoline taxes, \$92,180,406 from the Federal Government in the form of Federal aid for road construction completed, \$71,737,028 by transfer from the counties, \$33,390,642 by appropriations made by the State legislatures, and \$15,051,966 from miscellaneous receipts. In addition, the States had on hand at the beginning of the year a balance of funds from the previous year amounting to \$115,656,721, so that the total funds available to the State highway departments during the year was \$730,081,292.

The estimated total revenues of the counties during the same year were \$683,017,642, bringing the total revenues up to the estimated amount of \$1,347,442,213.

The estimated total expenditure by the States, counties and Federal Government during the year was \$1,288,939,707. Of this amount approximately \$649,125,101 was expended by the State highway departments exclusive of the \$92,180,406 expended by them for which they were reimbursed by the Federal Government; and approximately \$639,814,606 was expended by the counties and other local governments. All these revenues and expenditures are exclusive of the revenues and expenditures of municipalities for city streets.

Federal Expenditure. - During the fiscal year 1926 (terminating June 30, 1926) the Federal Government expended \$87,754,535. This is a reduction of approximately \$8,000,000 below the disbursement of the preceding year, and further reduction may be expected in the future as accumulated balances are expended and the program of expenditure reaches the rate set by the annual authorization of \$75,000,000 of the recent past and immediate future. The Federal expenditure of \$87,754,535 was probably approximately one-fiftieth of the total highway expenditure of the nation during the same period. The total Federal payments for the 59,083 miles of Federal-aid roads completed up to September 30, 1926, were approximately \$484,484,207. The total cost of these highways was approximately \$1,099,419,646, the difference between this and the Federal payments being the contribution of the States.

The Federal funds authorized by Congress for expenditure during the fiscal year 1927 (ending June 30, 1927) and apportioned to the States are \$73,125,000. The total of funds appropriated, or authorized and to be appropriated as needed, since the establishment of the Federal-aid policy in 1916, is \$671,375,000. Of this amount, as indicated above, approximately \$453,434,000 have been expended upon the roads which have been entirely completed; approximately \$154,777,000 are definitely allotted to the roads which are under construction; and \$18,865,000 are allotted to the projects which have been approved for construction; leaving a balance of approximately \$52,001,000 unobligated on September 30, 1926. This amount will be drawn upon for allotment to projects during the balance of the fiscal year.

DESIGNATION OF UNITED STATES ROUTES

Connected System. - In 1925 there were designated, by a board appointed by the Secretary of Agriculture at the request of the American Association of State Highway Officials, a system of main interstate roads known as United States highways. The 75,884 miles originally designated have been increased materially by additions and revisions of the routes first selected. The final figures are expected to be available after the adjustments have been approved by the executive committee of the American Association of State Highway Officials which is to meet at Pinchurst, North Carolina, from November 8 to 12, 1926. The designation of these routes is of national significance in view of the increasing volume of interstate motor traffic measured by a motor vehicle registration which has grown from 18,000,000 motor vehicles in June, 1925 to 20,000,000 for June, 1926.

United States Routes. - The miles of road designated as United States highways include 132 routes, those running east and west being designated by even numbers and those running north and south by odd numbers. The more important of these routes are 10 east-and-west routes and 13 north-and-south routes which extend either entirely across the country or the better part of the country's width and length. The other routes are intermediate between these most important arteries or serve as alternate or cross-over routes.

Markers. - All routes will be marked with standard direction and warning signs which are of two general classes. One group, the danger and caution signs, will consist of signs of four different shapes representing as many degrees of danger. These will have a yellow background with black letters and symbols. The other group will include the standard route markers in the form of a United States shield and directional and informational signs. All signs in this group will have a white background with black letters.

Since the initiation of the signing program, the States have made rapid progress. Twenty-two States expect to have their United States highways nearly all or completely marked by November 1, 1926. These include: Arizona, Colorado, Florida, Georgia, Idaho, Indiana, Iowa, Kansas, Massachusetts, Minnesota, Missouri, Nebraska, Nevada, Ohio, Oklahoma, Oregon, Rhode Island, South Dakota, Tennessee, Vermont, Wisconsin and Wyoming. On the same date the signing of these roads will be partially completed by ten States. These are: Arkansas, Connecticut, Kentucky, Mississippi, New Hampshire, New Mexico, North Carolina, North Dakota, South Carolina, and West Virginia. On November 1, 1926 no marking will be done in the other sixteen States.

Improvement of Transcontinental Roads Approaching Completion. - Ten years ago, when the Federal-aid plan was adopted, there were only five States in which there was a single improved trans-state highway. They were Massachusetts, Connecticut, New York, New Jersey, and Maryland, all Eastern States, and all of that small group in which the movement for better highways was begun in the nineties.

In 16 States there were then no State highway departments nor the semblance of a plan for the development of through routes across the State; and even of those States in which a recently created State agency was feeling its way toward a more scientific and businesslike administration of State highways there were few in which the conception of a connected State highway system had yet been clearly apprehended.

Today 25 States have continuously improved highways entirely across them in at least one direction and 16 of these have completed such trans-state arteries in two directions.

It is the primary purpose of the Federal-aid road legislation to expedite the continuous improvement of such cross-state highways in all States and finally to provide a completely articulated system of main interstate highways for the Nation. The goal, as represented by the Federal-aid highway system, is clearly defined and progress toward it has proceeded for the last five years at least without deviation. That progress will be continued with a more pronounced singleness of purpose in the future until it shall be possible to travel by highway without obstacle in any direction across all States and throughout the Nation.

There is now one transcontinental road which is 97 per cent improved. It extends from Washington, D. C., through St. Louis, Texarkana, and El Paso to San Diego. Of its entire length 93 per cent is surfaced and 4 per cent is merely graded and drained; and of the surfaced portion more than half is improved with bituminous macadam or better and the remainder is gravel. From Washington to St. Louis there is no unimproved section and nearly 96 per cent is surfaced with bituminous

macadam or some higher type of pavement. From St. Louis to Texarkana 2 per cent of the distance is unimproved and 63 per cent is improved with a gravel surface, the rest with superior types. From Texarkana to El Paso there are unimproved sections to the amount of 4 per cent of the distance, gravel surfaces 50 per cent, and bituminous macadam or better the rest of the way; and from El Paso to San Diego, with the exception of 6 per cent of the distance, the route is surfaced 60 per cent with gravel or equivalent and the remainder with pavements and surfaces of higher types.

This road from Washington to San Diego is more nearly completed than any other transcontinental route. Of its total length of 3,135 miles, 2,907 miles are surfaced and 131 miles are graded and drained, leaving only 95 miles without improvement.

Next in point of improvement is the route from Atlantic City, N. J., to Astoria, Oreg. Of its total length of 3,240 miles, one-eighth is still unimproved, nearly another eighth is graded and drained, and the rest is improved with some form of wearing surface. Of other east-and-west routes, that from Norfolk, Va., to Los Angeles is 68 per cent improved. From Boston to Seattle through the northern tier of States the most direct through road is 75 per cent improved and 59 per cent surfaced either with permanent or temporary surfacing.