

FIFTY YEARS OF PROGRESS  
IN HIGHWAY IMPROVEMENT IN THE SOUTHERN STATES

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A witness in a drainage case, asked if he had measured the depth of water in a ditch, answered, "I measured the water with a stick, but had nothing with which to measure the stick."

To determine highway progress in a large group of States in an adequate manner requires some unit or units of measurement that do themselves satisfy the understanding or assist the imagination to fill in the real picture. Mere figures or statistics possess only meager informational value. Neither years, miles of road built or funds expended tell the real story. Something more is needed.

Progress made against the most difficult opposition may not be measured only in terms statistical. Physical undertakings do require a certain amount of time, but small in comparison to the time and effort required to overcome the active opposition of ignorance and selfishness or the passive opposition of public inertia. So in highway progress the most reliable measure of progress is the principles which have been written into the laws and which must be relied upon to produce results. If these principles are right the results are certain. If they are not, no apparent results are a reliable measure of progress.

The fifty-year period just ending does not coincide with any one particular phase of highway development in the southern States. It covers several phases, to understand which it is necessary to go

back much further. Today highway progress has come when any State has written the following principles into its laws:

1. The division or classification of all public roads into groups or systems of like importance and the selection of a limited system of the main State highways under jurisdiction of the State.

2. The establishment of an adequate non-partisan State highway department.

3. The providing of State funds for construction and maintenance of the State system under the State highway department.

Other principles are desirable; the above are essential.

Highway progress can, then, be measured in these States by their laws, and by the organizations established under these laws. In these lie the truest story of progress through human effort.

Water transportation very naturally made its impress first upon the development of the southern States. The tidewater country was settled and brought to high cultivation. Country estates were built overlooking the water that have given us the finest standards of architecture and sound construction. The sea ports became thriving cities. Meantime the interior of these same States were almost unexplored, uninhabited areas. Then the Federal Government and the States began to build roads or to grant franchises to toll companies. The National Pike, built under the laws of Maryland from Baltimore to Cumberland, Maryland, and by direct appropriation from the Federal Treasury and under direct supervision of the Army engineers, westward to the Illinois State line, is the classic example of early highway

building. This road carried an immense traffic, and was a major factor in the settlement of the Ohio Valley. There were many other important highways. The State of Kentucky early began the building of State highways. Toll roads built by corporations developed largely in Virginia, Maryland, Tennessee and Kentucky. An important toll road was built from the Shenandoah Valley of Virginia via Cumberland into the central part of Kentucky. The first great road achievement in Arkansas, then a territory, was the completion by the Federal Government of a road from Memphis across the swamps of the Mississippi and on to Little Rock in 1828. This road was continued west to Fort Smith. Another road was built from the Missouri line to Little Rock to the southwest corner of the territory. These roads extending at approximately right angles from Little Rock to the four borders of the territory opened lines of travel that exerted the most profound influence on the development of that section of the South.

It will be noted that the State and Federal Governments, by direct appropriations or by granting franchises to toll companies, provided the early roads. Some were built as military roads to reach and connect the forts on the frontiers. But more grew out of the restless spirit of the pioneers who continually pushed westward to the new rich lands of the Ohio and Mississippi valleys and beyond these to the great plains of the south and southwest. A conception of what constituted a road exhausted the range of possibilities. Some were only

cleared trackways through the forests, but many of the toll road corporations employed engineers who developed high engineering standards for location and construction. On the national road the maximum gradient was 9 per cent. It had a macadam surface, and the streams were bridged with most excellent stone arches. Highway building reached relatively high standards of development before say, 1850.

The period 1790 to 1853, when the stage coaches ceased running on the old National Pike, marks the period of principal highway development under State and Federal jurisdiction. Only small beginnings had been made by the counties or communities. In the main, following the English idea, each man was expected to labor annually for several days upon the roads. In Maryland there is a record of cash taxes as early as 1764, and in this State there are many general acts providing for levying taxes for the purposes of road and bridge building. A law was provided for Baltimore County, Maryland, in 1766, providing for a tax of ten pounds of tobacco per poll. This is apparently the first record of authority of the counties to levy a tax on property in lieu of the voluntary labor tax in the southern States. But, generally speaking, the counties relied upon compulsory labor for road making for more than one hundred years from this first cash tax.

The State of Louisiana in 1870 permitted the police juries to levy a tax. Perhaps one of the outstanding early county laws providing revenues for road improvement was the Mecklenburg County road law passed by the Legislature of North Carolina in 1879. This law, after some

vicissitudes, was finally re-enacted in 1885, and has been referred to by competent authorities as the beginning of modern road legislation in North Carolina.

With the development of the railroads, highways ceased to be objects for the consideration of the Federal and State governments, whose attention was diverted to the building of new transportation, and the highways which had been so laboriously developed were turned back to the jurisdiction of the counties. The toll roads or pikes ceased to be profitable and were abandoned by the corporations.

Mr. Chas. H. Moorefield, Chief Engineer of the South Carolina Highway Department, gives a splendid picture of the transfer of interest from highways to railroads, as follows:

"Prior to the railroad era which began in South Carolina in the 30's, there were connected roads over which horse-drawn vehicles passed entirely across the State, the principal streams being crossed by ferries. A few of these roads and ferries received some support from the State Government, but they were for the most part under county supervision. Many of the most difficult ferries were abandoned during and immediately after the Civil War, and due to the development of railways have never been put back in operation.

"Beginning about 1890, the railroads in this part of the country began consolidation which, in about fifteen years, resulted in a well connected railway system, serving almost every center of population in the State. Along with this development in railway operation, interest in public roads became extremely narrow, so that between 1900 and 1910 much of the public road work was done by township units rather than counties. The interest at this time was almost altogether in local market roads."

In other words, in the century from 1775 to 1875, the highways under Federal and State administration had ascended to a high peak of development measured by the needs of that time, from which

they had rapidly gone back to objects of local concern only, and for the maintenance or extension of which in a majority of the States only the compulsory labor taxes were available.

From about 1860 to 1910 may well be termed the dark ages in highway development for this whole group of States. Here was a fifty-year period during which the roads were of local interest only. Every advance was made slowly and painfully, and by a tremendous expenditure of human effort. The constitutional amendment of 1899 in Arkansas provided a road levy of not exceeding 3 mills if a majority of the qualified voters in the county had voted the tax at the preceding general election. Not until 1906 did Mississippi have a county cash tax. County bonds apparently were not provided for to any considerable extent until after 1890. In 1898 the county commissioners in Florida were authorized to issue bonds for building hard surfaced roads, and the same year some counties in North Carolina were given authority to take a vote on the issuance of bonds. Maryland and Virginia, prior to 1910, provided some State aid to assist the counties, but it is apparent that the development for the fifty years prior to 1910 for this group of States as a whole was dependent upon local effort and local resources. Naturally some of the richer and more progressive counties made a most creditable showing. But these instances were relatively few, and no adequate highway development was under way and no plans by which adequate highways could be secured had been formulated. Generally speaking, the rural roads were

in a deplorable state of repair. The long reconstruction period following the war, lack of material resources, the lack of adequate legislation, and the general hostility to expenditures resulted in a deplorable condition of the rural highways except in isolated instances. There was no thought of continuity between communities or of highways performing a State-wide function. The report of the Maryland Geological Survey of 1899 says of the National Road:

"Though its glories have long since departed, and coach and wagon no more throng its way, the National Road, rich in its association of historic interest, still constitutes one of the most enduring monuments of Maryland's past, while the idea to which it owes its existence -- the welding of the West and the East in commercial and national unity -- has found other and more lasting expression".

Perhaps the chief characteristic of the period 1899 to 1910 was the granting of authority to the counties or road districts to issue bonds. All of the southern States seem to have provided such general authority except Maryland and South Carolina, where issuance of road bonds by counties has always been a matter for special legislation. As early as 1904 the State of Maryland had provided a small fund for State aid, but there was very little development of this principle prior to 1910.

It is apparent that for the southern States as a whole the fourteen years since 1910 is the period during which the big progress has been made. As soon as the automobile made itself felt, the reflex was manifested in the issuance of county bonds for the building of county highways

county highway systems. For example, prior to 1910 there had been no bond issues in any county of West Virginia, but from 1910 to 1917 the more progressive counties had issued a total of more than twelve million dollars in bonds for highway purposes. In Mississippi where almost no rural roads had received any adequate improvement, a start was made, and just prior to the war the annual construction had reached a rather large volume in the relatively richer counties. Under the county plan the relatively richer counties were able to go ahead to meet their own local needs, but the poorer counties made little progress.

The next step was the creation of State highway departments and the establishment of funds for State aid. The State of Maryland has continually led in the adoption of new principles of legislation. A State aid fund was established in 1904, and the State Geological & Economic Survey, having certain duties with reference to the roads, was established in 1896. A State Roads Commission was established in 1908. North Carolina followed with an ex-officio highway commission in 1901, Virginia in 1906, Tennessee in 1907, West Virginia in 1909, Louisiana in 1910, Kentucky in 1912; until, with the creation of the Texas Highway Commission in 1917, all of the States were provided with a central State authority. A number of these often had advisory powers only. The form of these departments and the duties have been changed from time to time until all of the States have established highway departments with organization and authority competent to administer the provisions of the Federal Highway Act, this being one of



the basic requirements of the Act in 1916. The principal difference which exists between the States now lies in the amount of funds and the sources of these funds which have been placed at the disposal of the highway departments. The States of Alabama, Maryland, Missouri, North Carolina and West Virginia have provided their State highway departments through State bond issues with funds, under jurisdiction of the department, greatly in excess of the Federal aid allotments, so that these States are carrying on not only the Federal aid projects, but are doing a large amount of work additional without other assistance.

While State funds have been provided in the other States, Arkansas, Georgia, Louisiana, Mississippi, Oklahoma, South Carolina, Texas, and Virginia are using in addition to State funds help from the counties, and improvement districts. The relatively large sums which have been expended in Arkansas, Georgia, Mississippi, Louisiana, South Carolina and Texas have been possible only through the contribution from these local sources.

Perhaps the outstanding example of providing funds for road construction occurred in North Carolina when, in 1921, during the very depth of the economic depression, the people of the State showed their faith by voting \$50,000,000 to be expended for road improvement. They followed this by an additional issue of \$15,000,000. The effect of this big program of road construction upon the State ~~has been~~

has been remarkable. It became evident after State funds for road construction were made available that adequate provision for maintenance of these roads was all important, Maryland in 1906 and 1908, and Louisiana in 1910, had provided for State maintenance; Tennessee in 1915, and the other States followed with the last acts in 1924. Provision for State maintenance in most of the States has only been made in the past three or four years, and it is this feature perhaps more than any other that has developed the sentiment and has placed road improvement on such a popular basis throughout the South. In the areas which have been cultivated for a long period the constant tilling of the soil in which there was considerable mineral matter, together with the rains and the wind, have left on the higher land a top soil which makes a cheap surfacing material which may be maintained under the lighter traffic. Sand-clay mixtures have also been widely used. The absence of frost of any considerable moment, which is so detrimental to the natural soil roads of the North, has made it possible by the modern maintenance methods, to hold in serviceable condition thousands of miles of roads after they have been graded and drained, and this has been the outstanding development up to the present time in the southern States.

The building of the higher type of roads is progressing, as it must progress, more slowly, but particularly in Maryland, North Carolina, West Virginia, and Louisiana, splendid progress has been made on the roads of this type. Maryland was the first State to establish a main road system in 1908, Missouri in 1913, Kentucky in 1914, North Carolina in 1915, until all of the States have now established a definite State highway system. A number of these laws have been subsequent to the Federal Aid Act of 1916.

It is apparent that the Federal legislation requiring, as it did, centralized State authority, very greatly helped the southern States to mature their laws providing for the essentials which have been referred to in the opening paragraphs of this paper. In a number of the States there is yet too much reliance placed upon financial help from the counties, and the road laws for this group will not become perfected until each State has State funds provided to build and maintain a State system under jurisdiction of the State highway department without aid, financial or otherwise, from the counties.

Through all these years the struggle to obtain legislation that would provide for highway improvement has been going on steadily, and from the above it is evident that State after State has brought its highway laws to a high state of perfection. The administrative organizations likewise have been improved and built up, until they are in a position to handle the road work on a sound and efficient basis. It is possible to obtain an idea of the physical changes by the following table showing the comparison between the road mileages in 1904 and 1921, and the improved road mileage for the same dates:

STATES	Total Road Mileage		Improved Surfaced Road Mileage	
	1904	1921	1904	1921
Alabama	50,089	58,410	1,720	10,420
Arkansas	36,445	74,866	236	3,871
Florida	17,374	27,643	886	6,438
Georgia	57,203	94,912	1,634	18,339
Kentucky	57,137	68,704	9,486	15,436
Louisiana	24,897	39,803	34	2,771
Maryland	16,773	14,772	1,570	3,663
Mississippi	38,698	53,085	149	5,744
Missouri	108,133	111,520	2,733	7,879
North Carolina	49,763	68,204	1,259	16,755
Oklahoma	43,554	134,263	—	2,461
South Carolina	41,830	61,850	1,878	6,908
Tennessee	48,989	62,546	4,285	9,878
Texas	131,409	167,685	2,128	14,883
Virginia	51,812	59,030	1,600	7,260
West Virginia	26,178	55,173	254	1,357
Totals	790,284	1,152,516	29,852	134,073

During this 17-year period the public road mileage increased by 40 per cent. During the same period the improved road mileage increased by 350 per cent. In 1904 only 4 per cent of the total road mileage was reported as improved, and in 1921, notwithstanding a 40 per cent increase in the total road mileage, the report shows 12 per cent of the total road mileage improved, and a considerable increase has been made in the improved mileage since that date.

The Federal Highway Act of 1921 provided that each State should lay out a system of roads not exceeding 7 per cent of the total public road mileage on which the Federal aid funds are to be expended. These roads comprise the main inter-State and inter-county roads.

For the past three years a detailed study has been made of the whole highway situation in these States by the State highway departments cooperating with the Federal Bureau of Roads.

In selecting the Federal aid system the most careful attention has been given to the planning of the inter-State routes that will connect all sections of the south with each other, and to the through routes which will carry the highway traffic to the north, east and west. Today this system, as planned, contemplates the improvement of through routes serving not only the individual States themselves, but the national traffic. They are opening up and helping to develop the mountain region for both summer and winter resort purposes, and making yearly more accessible the Gulf Coast country. In other

words, they are helping the south to capitalize in a very tangible way its recreational and resort possibilities, which are tremendous. Annually, the influx of travelers from the outside is growing. One section of the Shenandoah Valley reported this fall a foreign car per minute going south during a period in October. But for the people of the south they are bringing even greater advantages. The whole Appalachian system up to the beginning of road improvement under the State highway departments was practically an isolated region, both to those without and within. The roads in and through the mountains are opening up to the people of the Coastal Plain the cooler recreational areas, with relief from the summer heat, and are bringing to the mountain people the advantages of inter-communication, community life, and of an income from the outside. What has been so long needed by these mountain people, of the purest Anglo-Saxon blood, is the opportunity to communicate with each other, to build a community life, community interests, in place of the isolated family life which has been forced upon them by lack of communication.

The Federal aid highway system as now laid out, and the progress made in its improvement during the fiscal year 1924 is shown in the following table:

STATEMENT OF FEDERAL HIGHWAY MILEAGES

October 22, 1924

States	: Mileages Completed : during : Fiscal Year 1924	: Mileages of Seven : Per Cent System : Approved to Date
Alabama	: 281.6	: 3,872.00
Arkansas	: 120.7	: 4,624.00
Florida	: 54.7	: 1,883.00
Georgia	: 313.4	: 5,450.00
Kentucky	: 149.8	: 3,254.50
Louisiana	: 51.2	: 2,681.00
Maryland	: 60.6	: 1,441.74*
Mississippi	: 144.3	: 3,357.00
Missouri	: 357.0	: 7,530.00
North Carolina	: 110.2	: 3,790.30
Oklahoma	: 123.8	: 5,589.50
South Carolina	: 320.6	: 3,047.00
Tennessee	: 85.2	: 3,122.20
Texas	: 641.2	: 10,947.00
Virginia	: 163.9	: 3,068.20
West Virginia	: 52.0	: 1,918.50
Total	: 3,039.6	: 65,575.94

\*In excess of 7 per cent of total mileage.

The progress since the beginning of Federal aid is shown in the following table:

STATEMENT OF FEDERAL AID HIGHWAY WORK

As of September 30, 1924.

States	Work Completed		Under Construction	
	Miles	Total Cost	Miles	Total Estimated Cost
Alabama	731.6	\$ 8,382,784	654.3	\$ 12,321,253
Arkansas	991.8	12,378,233	351.7	6,763,086
Florida	194.4	4,937,458	115.9	5,690,738
Georgia	1,385.9	19,175,261	631.5	8,355,008
Kentucky	497.3	12,652,853	293.6	7,684,056
Louisiana	778.7	9,875,076	272.4	4,605,968
Maryland	266.8	7,423,354	60.6	1,949,792
Mississippi	699.5	8,557,661	466.8	7,923,724
Missouri	967.4	14,134,452	651.5	16,083,683
North Carolina	1,015.3	17,202,554	198.3	6,806,946
Oklahoma	596.8	15,041,717	317.7	7,366,808
South Carolina	1,131.1	10,563,111	358.6	5,061,070
Tennessee	351.1	9,778,626	396.4	12,755,153
Texas	3,443.0	47,065,736	1,425.8	22,989,552
Virginia	630.3	11,529,259	264.8	8,060,553
West Virginia	287.6	6,485,318	148.3	4,330,768
<b>Totals</b>	<b>13,370.7</b>	<b>\$ 214,733,452</b>	<b>6,608.1</b>	<b>\$ 133,749,158</b>



What is true of the mountain regions is also true of the Coastal Plain. Development roads are helping to open a region which can be made highly productive for many kinds of crops. Perhaps some little glimpses of individual States may give an adequate idea of progress. Mr. Herbert Wilson, Chairman of the State Highway Commission of Arkansas, says:

"Under our new road law development is proceeding, efforts are being made to connect up improvements previously made, and I think that within two or three years' time Arkansas can boast of a very excellent system of State highways well connected up so as to give service to the traveling public the year round. By that time I am sure that we will have three or four different routes entirely through the State completely surface".

Major C. P. Fortney, Chairman of the West Virginia State Road Commission, says:

"With this thirty million dollars (from the 1920 bond issue of \$50,000,000) and \$2,033,000 of Federal aid received from 1921 to 1924, the State Road Commission has built or placed under construction 1223 miles of road, 91 large bridges, 250 small bridges, and has reconstructed a considerable mileage of roads taken over from counties as parts of the State road system. The various counties have continued to expend money on roads. Some of this has been spent on State routes to hasten their completion within the borders of the counties making the expenditure, and some on roads connecting with State routes. Funds raised by bond issues for road purposes by the counties since 1917 have totaled \$22,231,700, or almost double the sum raised in the preceding 54 years. Almost all of the larger cities and towns of West Virginia are now connected by hard roads. The network of highways is being rapidly extended in every county".

Mr. B. H. Piepmeier, Chief Engineer of the Missouri Highway

Commission, says:

"We have one place where the improvement of a road has attracted a large corporation, and it has emponded one of our main streams, making a large lake for pleasure purposes and using the overflow for power development. Improved roads have developed isolated communities in that the improved road permitted heavy trucking, which served the community about as well as a railroad".

As has been noted throughout, Maryland has taken a leading position in the development of its highways, and the State has had an improved system long enough to have adjusted itself to the new means of transportation. Mr. J. N. Mackall, Chairman of the State Roads Commission, says:

"The soil of Southern Maryland and of the Eastern Shore was peculiarly adapted to the growing of market garden produce, so that it only needed a means of quick transportation to convert the land from a corn and wheat crop to the market garden crop. By transporting this market garden produce to the railroads for shipment in refrigerated cars, it made the crop easily marketable, and because of the choice of markets at the highest prices. Farm land throughout this area was sold for an average of \$30 an acre twenty years ago. Much of the land was not cultivated, so that its productivity was very limited. The land which sold at \$30 an acre twenty years ago will bring on an average of \$100 per acre today. Much of the land peculiarly suited for market garden produce sells for much higher than this, but the average price of farm land for the entire area has been increased from \$30 to \$100 per acre.

"Practically all of the intensive gardening is along the line of the improved roads, and it is quite evident that as the roads are further extended into the rural sections, there will be further land conversions which will add enormously to the value of the State. The taxable basis of the State outside of Baltimore City was \$320,849,699 in 1908, and \$765,477,588 in 1923. All of the increase in value perhaps cannot be attributed to the improved roads. That nearly all of it can, however, is not susceptible to proof, but is not disputed by any well informed person".

Mr. H. C. Dietzer, State Highway Engineer of Mississippi,

says:

"Relative to the benefits derived by isolated communities, we give you as a typical example the road situation in Leake County, in which are located Federal aid projects 102, 103, 104, and 105. At the time this road work was started this county was not served by a single railroad. Since the construction of these roads this county has made rapid progress in development. Many more schools have been built, and the commerce of the county has been such that while at the time the roads were constructed the sand clay type gave satisfactory service, at least one of these roads at this time is unsatisfactory and will be so until we can surface it with gravel. This development is only typical, as in all cases the advent of good roads has caused great steps forward to be taken in the construction of schools, the small schools which were formerly in existence being consolidated, and the students transported with motor trucks over improved roads for great distances, which formerly was impossible."

In South Carolina for the years 1919 to 1923, inclusive, there has been expended upon the State highway system for roads \$17,471,000, for bridges \$2,853,000, for maintenance and betterment \$1,695,000. In 1923 the registered motor vehicles increased by 34 per cent over the year previous, and for this year the increase has amounted to 21 per cent. Mr. Chas. H. Moorefield, State Highway Engineer of South Carolina, says:

"On the whole, my comment is that highway development is generally following the economic needs in South Carolina, but with a decided lag. When it is considered that from the time of King Tut down to about 1830 no change had occurred in transportation methods, and from 1830 to the present time, less than one hundred years, three decided changes in the methods of transportation have taken place, it does not seem strange that there should be a lag between the needs of traffic and provisions to meet these needs".

In Louisiana one of the splendid advances that has been made under the present State Highway Department is the building of important sections on inter-State and State roads over the marshes which from the time the country was discovered until now have remained impassable except during the driest weather. The swamp road construction in Louisiana will stand out as a monument in the coming years to those who are responsible for the work.

Florida has been making splendid progress in developing a system of main roads where there are many serious problems to overcome. Considering the difficulties and the relatively undeveloped status of the State, perhaps none have gone ahead with more courage than has Florida. The States of Kentucky and Virginia have been greatly handicapped by lack of adequate funds, and have necessarily depended upon the counties to help meet the tremendous demands for road improvement. The State of Virginia by adopting State-wide maintenance, has made a tremendous improvement in the serviceability of its system during the past few years.

The latest report from North Carolina, September, shows the progress on the State highway system as follows: Completed, 1708 miles, cost \$31,402,000; under construction, 1444 miles, cost \$29,393,000; and under contract 187 miles, cost \$3,542,000. The wonderful progress in this State since the first bond issue has been a demonstration of results through efficient, courageous administration and organization.

These figures do not show what has been perhaps the most remarkable accomplishment, that is, the maintenance and betterment of the whole State system, extending road service into all sections, and tying it together by the bonds of common interest. When North Carolina was selected as one

of the States in which to make an extensive tour for the benefit of the Latin-American engineers who were here to study highway building, the party were received with an outburst of hospitality and generous friendship throughout the State. While the State is hospitable and the welcome was genuine, there is only one way to account for the tremendous enthusiasm, and that is that it was the first opportunity many sections of the State had had to pay tribute to Mr. Frank Page, who is Chairman of the State Highway Commission, and has been the leader in the remarkable progress that North Carolina has made.

One of the outstanding highway developments in the south has been the construction of important bridges. Many of the larger streams require large and expensive structures to bridge the open water, and in addition the approaches lie over swampy ground for considerable distance on one or both sides of the stream. These streams and particularly the approaches have formed barriers to overland travel through all the years. Probably no more important work has been done than the building of important State and inter-State bridges to connect and consolidate the interests of the whole southland. The story of highway improvement in the south is one of progress, and it has practically all been written within fifteen years. With the remarkable progress in this short time it is evident that another decade will bring about an expansion and perfecting of the highway system that will do away with isolation of any district, will supply adequate transportation facilities to connect with and extend the availability of rail transportation, and will tie together all the more those who live north and those whose homes are south of the Mason-Dixon Line.