

THE MISSOURI HIGHWAY PLANNING SURVEY AS A BASIS FOR 1938 ACTION

Paper presented by H. S. Fairbank, Chief, Division of Information, U. S. Bureau of Public Roads, at the meeting of the Citizens' Road Association of Missouri at Jefferson City, Missouri, October 12, 1937.

Merited or not, the State of Missouri has somehow acquired a reputation as the abode of a hard-headed and skeptical race of men, possessed of an inborn and well nigh insatiable passion for facts. The phrase, "I'm from Missouri," on your lips, may be intended as a simple confession of nativity. It is not likely to be so interpreted by your fellow American. To him, more than likely it signifies the beginning of a demand for proof, to be followed immediately by those classic words of command, "You've gotta show me!"

In the Bureau of Public Roads, we have not been unaware of this reputation of the citizens of this State. It was, therefore, no surprise to us when, almost before the ink was dry in that section of the Hayden-Cartwright Act that permits expenditure of Federal highway funds for planning inquiry, members of this association and officers of the Missouri Highway Commission came, knocking at our door, with demand for a highway fact finding survey. Indeed, the search for the basic facts essential to highway program planning had then already begun in the State under other auspices, and what your representatives sought was only the means of continuance. The Bureau responded with the suggestion of a somewhat broader investigation, a suggestion that was immediately accepted; and so Missouri became one of the first of what is now a long list of 43 States actively to undertake a State-wide highway planning survey.

In thus choosing to expend not more than 1-1/2 percent of its Federal road building fund apportionment to prepare a sounder factual basis for its operations, the Missouri Highway Commission was simply applying to the administrative and economic problems by which it is confronted the same scientific method of study it has long so admirably and so successfully applied to the problems of a physical nature that arise in the course of its work.

Wherever there is interest in the science of highway design the physical researches of the Missouri Highway Commission are known and valued; and their results are applied, with benefit, far beyond the borders of your State. This is especially true of the remarkable work that has been done here toward discovery of the laws and methods of soil stabilization. Throughout the world keen minds are at work upon these problems, the final solution of which will literally revolutionize highway construction methods; but nowhere is more significant progress being made than that which is manifest in the tests and researches of the Missouri Highway Commission.

So, it was to be expected that a public road building agency of such traditions and such experience in the employment of the scientific method toward the solution of its physical problems, would, at the first opportunity seek to apply the same method in dealing with its economic, financial and administrative problems. And, so seeking, it was also to be expected that it would find its efforts firmly supported by the Citizens' Road Association, to which there must be accorded no small part of the credit for the consistently sound policies that have guided the whole course of State highway improvement in Missouri.

The planning survey effort was undertaken in this State with the definite purpose of obtaining facts for a proper extension of the 10-year program of State highway improvement that will be concluded in 1938. As the time for this expected action draws near, many of you, doubtless, are beginning to wonder whether this purpose of the survey will be fulfilled. Some, perhaps, are curious to know the import of the information that has been obtained and eager to learn whether, in all the array of facts, there are any that will help to support this or that opinion, already formed, of the proper course to pursue. And there may be some also, concerned by the very volume of the facts that have been assembled, who fear that the difficulty of digesting so great a mass will too long defer the possibility of helpful conclusion, and that the passage of time will rob the facts determined of their pertinence before they can be put to practical use.

To all these questions the first answer that may be given is that the initial gathering of basic facts is now almost complete; and the facts obtained are being arranged in the various forms and relations essential for their understanding and assimilation. For proper and necessary use much of the information can now quickly be made available.

It is true that the conditions observed and recorded do change with the passage of time. In most cases the change is neither rapid nor sudden, but proceeds rather gradually and with reasonably uniform trend. It will, therefore, be possible, by means much less elaborate than those required for the initial investigation, to estimate and record the changes annually as they occur, and so keep the record current. The Bureau of Public Roads has expected, from the outset, that this would be done; and will use the full weight of its influence to urge the continued reasonable expenditure required for the purpose. If, as we confidently expect, there is agreement on the part of the State, then there will be no loss of pertinence in the record established, but rather a steady refinement in accuracy and growth in

usefulness. If, conceivably, there could be any failure to provide for the essential continuance of the fact finding function, then this highway planning survey could be set down as a largely abortive effort to substitute rational planning for the system of "hunch and guess," and its considerable cost as, in large part, waste. But this is a culmination that, in this State at least, we cannot regard as possible.

Whether the facts discovered, when subjected to fair and unbiased consideration, will support any opinion that may have been advanced or any definite plan of action that may have been proposed, will depend upon the shape of the facts and the revealed soundness of the opinion or plan. Acceptance of the principle of rational planning implies a willingness to submit all action to the test of fact.

And so, coming last to the first question - the question of the timely availability of the planning survey's product of facts to serve as indices to desirable action in 1938 - I have already said that the bulk of the facts sought have been gathered and are fast being arranged in forms convenient for study. Whether the conclusions that can be reached within another year will be a sufficient guide to the action intended, depends somewhat upon the vigor and competence with which they are pursued, and more upon the complexity of the action it is desired to take.

If it is desired simply to make temporary provision for continuance of the work of the State Highway Commission, with reasonable certainty that the provision made will be found consistent with later planning of longer range, there is no doubt that a satisfactory basis for such action can be assured.

It would doubtless be possible also to find assurance in the survey facts of the essential soundness of a longer extension of the program of State highway improvement, considered, as it has previously been viewed, as a thing apart. Presumably such a proposal would take the form of another decennial program. But although, apart from all other considerations, it would doubtless be possible to plan such an extended program that, within itself, would possess the elements of soundness, it is questionable whether, as a matter of broad public policy, such an extension should be so considered at this time.

When I speak here of the possibility of assuring the essential soundness of such an extension within itself, I mean that it might be possible to agree that, in the period contemplated, certain works of modernization and extension will be carried out within the framework of the various groups of roads comprising the State highways, that these certain works may probably be accomplished within certain limits

of cost, and that to meet this and other foreseeable obligations, within the period in question, will require a certain change in the revenue at present appropriated to the highway commission, which change may be accomplished by this or that taxing measure.

When I question whether, at this time, such a disposition of this very important matter is really consistent with the broader public interests, I have in mind principally these thoughts: First, that the limited group of State highways, while unquestionably of preponderant importance among all road facilities, is yet only a part, and not an independent part, of the whole road and street system; second, that all road and street facilities comprise only one side of the highway transportation plant, of which the vehicles, making daily and essential use of all the ways, are the other side; third, that this whole highway transportation plant, now become a unit of tremendous significance in the economic and social structure of the State, should, in the broader interest, be comprehended and dealt with as a whole; and, fourth, that the true soundness and worth of any long-term provision affecting the further development or utility of any part of this complex organism can be appraised only when its probable effects upon the whole are known.

Perhaps we can make the thought a little clearer if we assume that it is proposed to formulate a certain 10-year program of State highway improvement, of definite physical and financial limitations, and then try to enumerate just a few of the ways in which the decision on such a program would be affected by, and have effects upon, other circumstances within the whole scope of highway transportation but outside of the immediate field of the State highways.

Before you can begin to decide upon the physical limits of your projected program, you will have to know as definitely as possible what will be the character of the vehicles that will operate over the roads to be built. For example, how fast will they travel? How fast will they be allowed to travel? The modernization of the existing main highways of the country is now an urgent necessity mainly because of the recent upward changes in the speed of vehicles. It will be virtually impossible to proceed intelligently; certainly it will be unwise to proceed far upon such a modernization program until there can be agreement upon the future regulation of vehicle speed that will permit the roads to be designed in definite relation to the actual maximum speeds at which they will be traveled. Here then, is an essential decision, wholly outside of the limited field of a program of State highway improvement, without which we cannot properly make even an approximate estimate of the required physical character of the roads to be built; and, see how important this

decision is: Upon it will depend the sharpness of the curves that may be safely included in the roads' alignment; upon it will depend the sight distances that must be afforded for safety of operation. The latter will affect the character and cost of the grading of the highways; and both permissible curvature and essential sight distance will influence the necessity for the acquisition of right of way - an item incidentally that will loom very large in determining the expense of the modernization program.

But permissible maximum speed is not the only vehicular characteristic that should be known before we try to forecast the character and cost of our modernization program. All of the limiting dimensions and characteristics of the vehicles have important bearing, but of special importance, after the maximum speed, is the hill climbing ability of motor trucks and trailers. How fast these vehicles shall be able to travel with load on hills of various gradients will have a very important bearing either upon the maximum grades of the modernized highways or the character of other provisions that will be necessary to prevent the obstruction of the high speed movement by underpowered freight vehicles. And, please note that whatever provision is here implied will have a definite and considerable effect upon the cost of the modernization program.

The effects of maximum permissible wheel loads upon the character and costs of our future main highway program are so obvious that they can be dismissed with bare mention. But, as to all these vehicular effects upon the program, I would point out to you, particularly, that every one of them involves a definite decision in regard to the regulation of traffic, that should be made in advance of the decision on the character and limits of the program - limits both physical and financial. And, if it should occur to you that we have managed somehow in the past to build a system of main highways in the absence of such definite decision upon the limits of vehicular characteristics, I would remind you that it is due precisely to that lack of agreement that we are now confronted the country over with a very pronounced obsolescence of those highways that presages the heavy cost of modernization of which we have been speaking - repetition of which we shall certainly wish to avoid if possible by present forethought.

Well, so much as to the effects of the character of vehicles upon our projected program. Suppose we turn briefly to a consideration of the effects of future vehicle taxes upon the program, and reciprocally, of the program upon taxes. Unquestionably the taxation of vehicles will be a major source of support for our projected program. Let me direct your attention to the freight-carrying vehicles only. The present Missouri license taxes on such vehicles of

the various weight classes are purely nominal. In all probability any future revision of the structure of vehicular taxation designed to increase revenue will involve changes in these rates for the freight vehicles. But the number of each of the various sizes in use today is certainly conditioned to some extent by the present taxes. If these taxes are changed what may be the changes that will result in the relative numbers of the several classes? And what will be the effects of these relative changes in number upon the total revenue that will be raised by any given gradation of tax rates? Here you have a veritable chicken-and-egg problem, involving the physical road effects of various sizes and weights of vehicles, the resulting costs of the roads, and the essential taxes on the vehicles, which reflecting upon the weight classification may affect reciprocally the cost of the highways. It is a problem that positively defies reasonable solution in any way that does not give simultaneous and balanced consideration to all its parts.

We are enumerating just a very few of the many ways in which decisions in regard to our assumed 10-year program of State highway improvement will be affected by, and in turn affect, other matters, outside of the restricted field of the State highways, but still within the complex system of highway transportation. We have mentioned thus far only some of the possible interactions between the essential State highway decisions and decisions in respect to the regulation and taxation of vehicles. It may be that the examples already cited are sufficient to illustrate the point; but I do not think that we should stop without at least a passing reference to the relation of our State highway decisions to other decisions that sooner or later we shall have to make with reference to the construction and maintenance, the financing and administration of those other parts of the entire highway plant - the remaining rural roads and the city streets.

Is it really wise to attempt to project a State highway program 10 years into the future without very definite consideration of the joint relationship of that program to the work that will be done in the same period on the city streets and the other rural roads? And is it possible in the space of a few months to give these matters the careful consideration they should have? Many, but not all, of the facts for such a consideration will shortly be available. The planning survey has collected them. But, can even the available facts be studied; can a rational course of action be decided upon; and can such a course of action be thoroughly and publicly explained as it should be, all within a year's time? These are questions to which, as you approach the time for action, you should give careful thought.

You project your 10-year State highway program. Parenthetically, we may ask ourselves is it really necessary under the present circumstances to attempt to prescribe for a term so precisely fixed; but here we are still speaking hypothetically. So you project your 10-year State highway program. If it is fully to encompass the works that in such a period will be imperatively required, it will involve important new tax decisions. Can these decisions safely be made without full consideration of the probable parallel needs of the lesser roads and city streets? The costs of these other facilities, whatever may be the forms of taxation by which they are raised, will be joined with the cost of the State highways to make up the total cost of the whole highway system; and it is this total, however it may be composed, that the taxpayers of the State will be required to pay for their road service. The magnitude of this total may not be indefinitely increased. Can we then safely increase one element of it without careful consideration of what we may wish to do about the other elements?

A moment ago I suggested that not all the facts essential for these considerations have yet been gathered by the planning survey. I had in mind certain studies, which it is very desirable to make but which have not yet been made, concerning the need of through routes in cities and bypasses around them, and also certain other very important studies having to do with the relation that should exist between future plans for the improvement of rural feeder roads and probable changes in the present pattern of rural land occupancy and use.

The feeder roads are as essential in their way to an harmoniously developed highway transportation system as are the main highways in their way. If we are projecting a long-range program we should not neglect their needs; we dare not neglect to provide against their certain cost. I am speaking here not as a protagonist for the so-called farm-to-market roads. I am not making a purely emotional plea for unlimited improvement of the lesser roads; quite the contrary. I am trying to say that in the future just ahead of us there will be a definite need for an improvement of that part of the lesser road mileage which will serve a useful purpose - a purpose which we shall probably wish to define rather broadly, in social as well as economic terms. For whatever we may do there will be a certain cost, and we should not neglect to include that cost in our calculations as we now plan the future of our highway improvement program.

But time will not permit a further extension of these hypothetical considerations. We set out upon them with the purpose of illustrating the very complex nature of the problems that should have your careful consideration in advance of any decision in 1938 upon a long-range extension of the past program of State highway improvement. We were dealing with the question whether the information obtained in

the State-wide highway planning survey would be available in time to be of assistance in formulating such a program. We had remarked that a vigorous continuance of the tabulation and classification, the mapping and charting, now in progress would assure an early availability of the facts that have already been collected. But, we had raised the question whether it were wise to consider another 10-year extension of the State highway program apart from the various other related questions concerning the regulation and taxation of vehicles, and the improvement of other rural roads and city streets, all of which are involved together in the intricate and important problem of highway transportation.

It is my own belief that this composite problem will be satisfactorily dealt with only by treating it as a whole. The scheme of the highway planning surveys was consciously designed to supply all of the wide variety of facts necessary for consideration in such a treatment of the whole problem. These facts are now substantially in hand in this State. They should be carefully studied in all their implications, so that out of such study there may come a clear perception of all the related actions that should be taken to effect an harmonious solution of the whole problem. I urge that you so study them.

When you do study them, I believe you will find that there are elements in the present situation that differentiate it markedly from the situation that prevailed when you embarked upon the program you are now completing. Ten years ago, the plan you adopted was a very wise one. Because it has proved its wisdom there may be a considerable appeal in the idea of an extension of policies as nearly as possible like those that have been followed. Another 10-year program of State operation, limited and closely defined in a manner similar to that of the last ten years, may look like the wise and tested course. But before you accept that idea completely I would urge that you study the implications of your planning survey, and especially that you consider the changes that have occurred in the last ten years and the effects of such changes upon the status and needs of the country's highway transportation system.

Ten years ago you had still to complete a satisfactory initial improvement of your main highway system connecting the major cities; that need overshadowed all others. The roads required could be clearly perceived and readily agreed upon. There could be no question that a program that would result in their quickest possible improvement was then the most essential program. Today these main inter-city roads have been improved; they are in daily use by a traffic that has become an indispensable factor in the economy of the State and Nation.

Ten years ago the clear job ahead was largely a construction job - the creation of a main highway plant. For that purpose the creation of a debt was both a feasible and a desirable course. Today you have your main highway plant essentially created. Initial construction no longer occupies the center of the stage. Year by year it will yield its position progressively to maintenance and reconstruction as the principal occupations of your highway forces. You still have your debt, and the period just ahead will be the time when you will be calling upon the still multiplying users of the roads you have created to pay back for its retirement a part of the operating savings the roads make possible. But you will think twice, I believe, before you will increase the debt. You will realize, I believe, that your main highway system has entered the operating stage - that stage in which it should earn its way, the stage in which it should be dealt with, always, as the needs of its traffic demand and as the capacity of that traffic to pay is demonstrated, the stage when everything you do to it - whether it be maintenance or betterment, or reconstruction - should be determined by operating needs and the operating return.

Ten years ago, the development of motor vehicles had still to foreshadow their ultimate form or their economic limits. It was still a little early to decide upon what would be a fair payment for their highway service. Today we can begin to see with greater clarity the probable course of their further development both in numbers and in essential form; and today we can more clearly decide, if we try, what the vehicles should be called upon to pay and what they fairly can pay. Remembering that we have passed into the operating stage, I believe you will see that this consideration of the character of the vehicles and the closer determination of their reasonable payment for service is an essential and basic operating policy. On the highways it is no simpler to provide surfaces and structures for an unregulated weight of vehicles of unregulated operating characteristics, than it is on the railroads to provide rail and curvature and superelevation for locomotives of unknown weight and unpredictable speed.

Ten years ago the status of the lesser roads was simply that of the postponable. Farmers then wanted good roads to their gates as much as they do now. But except as they might obtain them through local governmental effort it was impracticable to provide them. As, for the better part of a century, the capital resources of the country went to the building of the railroads, so for a period it was necessary that effort be confined largely to the building of the main roads, and for the same reason - because they served the largely preponderant need of the time. Today we have our main system in operation. Its possibilities of service as an agency for

the economic development of the State and Nation depend in part upon the correlated improvement of a system of important feeders. More than that - the times have greatly changed since 10 years ago. We look to a future now that has a different aspect from that which we could then perceive. We could not then see as clearly as we now may that this highway transportation that we have been building for is a tremendous new force of a kind different from any that existed previously in the Nation; that, joined with widely distributed electric power, it is a dispersive force tending to decentralize what, by the concentrative forces of unsupplemented rail transportation and steam power, has previously been centralized. Nor could we see 10 years ago as I think we may now begin to see that these new dispersive forces come to our hand with a singular time appropriateness - a time when we have reached our last extended frontier; when there is no longer a new far place to populate; when our journeys and our hauls have reached their longest possible extension; when we have extensively covered a continent with our civilization; and when our future development is certain to be no longer outward but inward; when the surplus energies that we have hitherto thrown into an extensive development of outward lands must turn back to the intensive cultivation of the far from adequately developed places we have left within our every section. If this that we think we may begin to see is really to be the future course of our country's economic and social development, then the feeder road and the local land service road will take on a new significance among the most essential, most powerful instruments of that development in Missouri and in the whole of America.

It is such thoughts as these to which you might give rather careful consideration as you approach your 1938 time of action. It is such thoughts that first moved the Bureau of Public Roads to suggest the highway planning surveys. We have regarded these initial surveys as a stock taking at a time which, the country over, is a time of important decision. Everywhere, we are passing from the initial stage of first capital investment into the important and continuous stage of operation. Everywhere as we enter this operating stage the need to correlate the vehicle with the road becomes imperative. Everywhere there is both the immediate occasion for the correlated improvement of feeder roads and the prospect of a radical departure in the economic and social potentiality of the local roads. The planning survey was designed to gather the many facts that are needed for consideration of our present position as a springboard toward the future. But the planning survey, as an isolated undertaking, to be halted tomorrow, will give a very limited service. As the beginning of a constant service of information concerning the changing needs of year-to-year operation of a highway system, to be continued and constantly resorted to as a guide to the future course - as the Bureau originally conceived of them, and as we now urge you to consider them - they are the absolute necessity of the period of highway transport operation upon which we have entered, and the best substitute in this new step for the closely defined construction program which in the past has given preassurance of sound investment.

So, as you approach 1938, I would urge that you carefully consider whether for your future operations the policy that has safely guided your past is really the one that will serve you best in the future. In view of the success of the last 10-year program, another as nearly as possible like it is the idea that may appear as obvious. I doubt that it is the best idea. I think the suggestions I have here given indicate the superiority of a less rigid plan. A plan that is determined not all at once and in advance, but one that is adjusted by determined needs as it progresses into a changing future of operating necessities. I urge that you consider these suggestions and that you resort to the facts determined and to be determined by the planning survey and its necessary continuance as the basis upon which to form and constantly adjust an essentially flexible future highway policy.