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Review and Forecast of Public Roads Problems

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Looking backward over the last thirty years of American road building and the associated development of highway transportation must, I think, inspire in anyone able to appreciate at all the difficult problems that have been met and solved, a feeling of wonder that the progress has been so steady, the setbacks so few.

Some of us who are not yet willing to be classed as ancients have witnessed the whole remarkable process; the first horseless carriages, the steady improvement of automobiles, the shift of public reaction to them from ridicule through resentment to universal acceptance and grateful usage; the development of road types to resist the new forces imposed by the self-propelled vehicle; the gradual transfer of the burden of road cost to the motor vehicle; the growth of State highway agencies; the participation of the Federal Government; the mechanization of the road building industry; all culminating in the busy and efficient highway facilities of today.

But, though we may take pardonable pride in the overcoming of past difficulties, it is well to remember that problems that still confront us will take quite as much of careful thought and planning as any thus far met. These problems that remain - some of them of

the knottiest and for that reason thus far evaded - lie in all highway fields; in administration, finance, taxation, traffic service, and safety, and in the location, construction and maintenance of roads.

The Administration of Local Roads

What to do about the administration of the large mileage of local rural roads is a question that should have early attention. As to the roads over which the State highway departments preside there is no major administrative problem. But State agencies administer only about 324,000 miles of main highways. More than two and a half million miles of lesser roads remain under the authority of some 3,000 county governments and a larger number of township officials.

The very number of these local road authorities is sufficient to defeat the purpose of bringing about a condition of uniformity of administration of the local roads. The size and wealth of the areas over which they have control are generally so limited as to prevent the economical application of adequate supervisory control and equipment plant; and the local officials themselves are particularly subject to that form of neighborly pressure which is so difficult for an elective official to resist and which is so inimical to the rational administration of a highway program.

As to the township unit, the reasons for its complete abandonment are so cogent as to make this reform a matter of urgent desirability. The case is not so clear as to the county.

In North Carolina, county officials have recently been shorn of all highway authority and their former powers have been transferred to the State highway commission. Unfortunately the experiment has been launched under difficult fiscal conditions which jeopardize the administration; but the results will be followed with keen interest by all who have a concern for the future of our highways.

In Pennsylvania and Missouri, less drastic measures have been taken involving the transfer of only a part of the remaining local mileage to State control; and these experiments also will bear careful watching.

The question to be answered is how best to apply needed expert supervision and the economies of consolidated control to the local road work, and whether to do this it is necessary completely to abolish local control or whether a measure of local responsiveness consistent with our inherited ideas of government may be retained, with modifications to meet the present needs.

There is much reason to believe that the situation demands, as a minimum, the creation of a centralized control of taxation, budgeting and purchasing, and at least strong advisory powers in the hands of the State highway agency to guide the choice of location and the character of local road improvement. Subject to some such restraint and guidance it may be desirable to retain the local highway authority as the executive agency and to insure the expression of the local view.

National Road Classification Needed

So long as we maintain mutually independent authorities for the State and local roads there will probably continue in existence certain anomalies of road classification which mitigate against complete rationality of highway development and finance.

The roads that have been designated as State highways are generally those that connect the more important cities and towns and serve as the main lines of traffic flow. Broadly speaking they are the roads of greatest traffic importance and are of general interest to the State at large.

The much greater mileage that remains under local control consists in the main of roads of purely local interest, which serve as feeders to and distributors from the main highways and railroads, and render their principal service directly to the land to which they give access.

But, under existing conditions, it is perhaps unavoidable that there are included in the systems under State control some sections of relative unimportance which partake more of the character of local roads than of roads of general interest; and, per contra, there remain under local control many roads which would more properly be placed under the authority of the general State agencies.

With control of the State highways and the local roads under separate and independent agencies, transfer of road mileage from one

system to the other in most States is a matter requiring legislative action, and the transfers made are not always made upon rational or economic grounds. If, instead of the present dual control of the entire road net, there were single control under a State agency or something approaching such singleness of administration, the probability would be greater that a classification of the roads would be made upon the basis of their real character.

Principles of Finance and Taxation Involved

The importance of a proper classification appears most clearly in consideration of the methods of taxation and finance to be employed. Local roads, properly so classified, are purely land servers. By improving access to the land they contribute to its value. Their traffic is relatively light and the degree of improvement they require is inexpensive. For the financing of such roads it is reasonable and proper to tax the land; and it will be found that such taxes will not be burdensome.

The State roads, if they have been properly selected as roads of really general interest, have no such close relationship to the rural land through which they pass. They require a high type of improvement which is necessitated not by the needs of traffic originating upon the adjoining land, but by the accumulation of traffic brought to them by many feeders and by the large inter-city movement. It would seem that support of such roads by vehicular taxes is entirely reasonable.

The present methods of finance, considering the country as a whole, approximate such a division of the burden upon land and motor vehicles, but there is no consistency of purpose or principle. There is a great deal of useless interchange of funds between State and county agencies which tends to obscure the purposes for which money is collected and used. If it were clearly recognized that we have the two classes of roads to deal with - and I might add streets also, because there is in the cities the same division into local and general-interest thoroughfares - the solution of many problems of finance would, I believe, stand forth more clearly. Much misrepresentation, now practiced, of the purpose of highway expenditures and the incidence of taxation would under these conditions be impossible; and taxpayers, whether owners of land or motor vehicles, would have greater assurance that the taxes they pay would be used for a purpose that would bring them a direct return.

Application of the same principle would, I believe, bring a solution of the problem of the right of the cities to a portion of the motor vehicle and gasoline taxes. When we recognise that there are routes of general interest and local routes the sections of the through routes which lie in the cities should have the same recognition and treatment as those which lie outside of city limits; and local streets in cities would also be recognized, as clearly as local rural roads, as a proper burden to be borne by real property.

Do Heavy Vehicles Pay Their Share

With acceptance of the motor vehicle's duty to pay the whole cost of the roads of general interest there rises the question as to whether motor vehicles as a class are at present properly taxed to meet this cost, and whether the various types and sizes of vehicles are taxed proportionately to the expense which the provision of highways for their use entails. Weight, capacity, or some similar measure of the size and load of the vehicle is at present a factor in determining license fees in all States, and gasoline taxes also mount with the size of the vehicle. The larger vehicles are, therefore, paying in some measure now for the greater expense of roads to which their operation induces. The question is, are they paying enough? Or, as I dare to suppose, in some States, too much? No informed person, I am sure, credits the misrepresentations which seek to establish it as a public belief that these heavier vehicles have free use of the highways.

It is important that studies be inaugurated in the near future in all States to determine exactly what the situation is with respect to the relative benefits and burdens of these heavier vehicles flowing from the roads provided by the public. A recent estimate, based upon necessarily approximate data, seems to show clearly that in Pennsylvania license fees and gasoline taxes are already adjusted in such a way that motor vehicles, as a class,

produce sufficient revenue to pay for the improvement of the entire State highway system of 13,300 miles, with each size of vehicle bearing substantially its proper share - even the heaviest trucks, which probably make use of only a part of the system.

In the investigations that should be undertaken, one of the important facts to be determined is exactly what roads are utilized by the heavier vehicles to an extent justifying the construction of the road surface of sufficient strength to withstand them; and, naturally, the vehicles should be held responsible only for that part of the expenditure which goes to make these roads adequate for their use.

Restriction of Interstate Traffic Should Be Resisted

Another question that will shortly have to be faced squarely concerns the attitude of the public to proposals from interested sources that various restrictions be placed upon the interstate movement of trucks and busses. The proposal in general takes the form of a demand for the taxation of these vehicles at the regular annual rates in all States in which they operate. In one State it is proposed to apply the tax to vehicles coming into the State if they make more than a single stop within the State's borders. If such efforts are successful the multiplication of taxes which will result will very seriously handicap interstate transportation by highway.

On the other hand, there is some reason in support of the plea that where a regular use of the roads of one State is made by vehicles owned in another commonwealth, the State whose roads are used is entitled to some compensation. It would seem that the existing reciprocity agreements amply cover the usually casual interstate travel of privately-owned vehicles whether trucks or passenger cars, since such interchanges tend to balance. The case may be different with respect to common-carrier operations and a few other movements which occur over fixed routes and on regular schedules. Here there is regularity of usage. The casualness and mutual benefit which suggest the prevailing reciprocity agreements are not present, and a different solution is justified. A reasonable method of dealing with the situation presented, without imposing unbearable burdens upon legitimate and useful interstate commerce, would be to set the vehicles which engage in such traffic apart from private vehicles and, in each State through which they operate, tax them upon the basis of the known capacity-mileage of the vehicles operated. If the tax rate were properly adjusted such vehicles would then be required to pay no more for their use of the roads than similar vehicles privately owned; but each State in which they operate would receive its fair share of their tax payment.

Coordination of All Transportation Facilities Required

The least observant must see that these proposals for multiple taxation of interstate highway traffic are inspired by those who have at heart the interests of the railroads, or think they have. This suggests another problem, not exclusively pertinent to the highways, but nevertheless one which demands the most careful thought of highway officials as well as others, and one which cries most urgently for prompt solution. I refer to the proper coordination of the various transportation agencies operating by rail, water, highway, and air.

I have heretofore suggested, as a means of inaugurating steps toward such a coordination, the creation of a Federal transportation board made up of representatives of existing Federal agencies having to do separately with each form of transportation. Whether or not the agency be so constituted, I believe some such agency desirable and it should, of course, be representative in its constitution of all the transportation facilities affected.

Virtual Agreement on Vehicular Weight, Size and Speed Limits

With respect to those restrictions of motor vehicles designed to protect the roads there is at last virtually complete agreement in principle by all interests. In accomplishing so much the National

Conference on Street and Highway Safety has been particularly effective. The provisions of its proposed uniform code have been adopted in large part by several States. What remains is to reach an agreement on a few remaining points and then work in the most effective way to realize in law the principles agreed upon.

Agreement is practically unanimous upon a maximum height of 12 feet and a maximum width of 96 inches. The uniform code provision of maximum length - 33 feet for single vehicles and 85 feet for trains - meets some reasonable objection: by motor vehicle manufacturers who urge design necessities as the basis of a plea for a single vehicle length of 35 feet; and by many highway engineers who object on grounds of safety at curves to the train length of 85 feet. Some engineers incline to the belief that the maximum should be no greater than 45 feet. Motor vehicle interests would probably agree to a reduction to 65 feet. There is a pronounced feeling that the various interests affected are not far apart in their views, and it should be possible shortly, if the effort is put forth, to settle finally the long continued debate over these regulations.

The American Association of State Highway Officials recently approved a resolution calling for the general acceptance of an axle load of 18,000 pounds and a wheel load of 9,000 pounds as the minimum restrictions to be placed upon load concentration on high-pres

pneumatic tires. Acceptance of these minima does not prevent the permission of greater weights in any State but does assure interstate traffic that no less will be demanded anywhere.

The Association's approval is based upon the results of research which show that wheel loads of 8,000 pounds on high-pressure tires will be safely supported with ample factor of safety by the prevailing heavy pavement designs. If, as seems likely, the investigations show that an increase to 9,000 pounds per wheel would be safe when carried on balloon or low-pressure tires, there is every reason to believe the Association will modify its position accordingly.

The recent high-speed impact tests of the Bureau of Public Roads have shown that the effective impact of heavy vehicles is not increased between the speeds of 25 and 45 miles per hour. This means that between these speeds regulation must be based upon principles of safety only.

Highway Safety An Ideal Still to be Realized

Much remains to be accomplished to make the highways as safe as may reasonably be expected. The menace of the projecting culvert headwall is easy to be rid of. The deep side ditch, which so often serves no necessary drainage purpose, can be eliminated and its place taken where necessary by underground tile. Many curves are still

dangerous, crowns too high, surfaces too slippery. The remedies for these conditions are well known. All that remains is to make use of them. And it is especially to be remembered at this time that many of these desirable improvements may give much needed employment to otherwise idle men.

It seems to me, however, that of all the needed improvements in the interest of safety those behind which it is necessary to assemble the greatest pressure are two; first, the elimination of dangerous grade crossings, and second, the construction of sidewalks in congested areas. Both of these improvements are hampered by inadequacies of law and the lack of cooperation of interested parties, as well as by limited funds. Means of expediting programs along both lines require the earnest thought of all who sincerely want to reduce the mounting toll of human life on the highways.

Subgrade Research Important

In the fields of design, location, construction, and maintenance, principles are fairly well established, or so it seems to me. The most important problem is that of the determination of the character of the subgrade and the development of means of improving weak soils. The vigorous research which is under way and which has already produced much of valuable suggestion must be carried on with all possible speed.

So far as vehicular effects are concerned, I am impressed that we already know them with reasonable accuracy and can deal with them adequately in design.

In the location of highways there is room for considerable improvement, particularly in some of the older Eastern States where early construction was designed to meet less exacting traffic demands.

The struggle for improvement in materials must go on without remission; and there is special need for the further development of materials and processes suitable for use on the more lightly traveled roads. In this field it will be well to maintain a constant search for new - perhaps radically new - methods and materials. The needs are low cost of construction and maintenance and an adaptability to mechanical performance of all processes either of construction or maintenance, in order that the large mileage involved may be benefitted with the utmost speed.

More Adequate Accounting Methods Demanded

There is just one further suggestion which I have reserved to the last. I am sure that there is need of more careful attention to the systems of expenditure control and record keeping in many of the State highway departments. The similar need in the offices of the local highway authorities is, of course, notorious; but I question whether much improvement may be expected there as long as these agencies are without superior supervision.

However, there should be no longer any toleration of laxity in this respect in State offices. The principles of systematic accounting methods are well understood. Modern equipment is available which permits records and accounts to be kept in such manner that even so active an operation as that of road construction need no longer be carried on without the most precise and up-to-the-minute knowledge of the progress of transactions from day to day.

Real efficiency and economy are difficult of attainment lacking such complete records and accounts. Dishonesty finds the lack its most effective ally. Political obstruction and criticism flourish when the administrator's reply is locked in the obscurity of uninformative records. The utterly indefensible lack of positive knowledge of the costs of maintenance arises from the same defect of the administrative machinery. There has been much talk on the subject. The time for action - vigorous and effective action in all States - is overdue.