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HIGHWAY IMPROVEMENT POLICIES - FEDERAL, STATE AND LOCAL

In presenting this subject - "Highway Improvement Policies - Federal, State and Local" - before this Transportation Group of the United States Chamber of Commerce, it is necessary to limit the scope to those matters within the field in which the Bureau of Public Roads is operating and to select a limited number of the aspects which appear to be most timely.

The public, generally, can not help being greatly concerned over the reports of widespread damage which the highways have suffered during the immediately preceding winter and spring months. Added to this general damage is the localized loss and damage to bridges and highways, throughout extensive areas in many of our States, caused by extraordinary floods and storms. It is quite impossible to evaluate the indirect losses from these conditions. The disruption of the business and social life of the communities, the interference with the delivery of mail and with the normal local movements within each community, accidents resulting from broken road surfaces, and the depreciation of motor vehicles on roads varying from bad to impassable, in the aggregate total very much larger amounts than the direct losses of the facilities themselves. Too often under such conditions attention is focused upon the visual and more or less spectacular losses of the facilities. The more important sum total of the losses suffered by the community and individuals, due to the loss of the use of the facilities, is overlooked.

In June 1934, an authorization of \$10,000,000 was made by Congress to provide for the restoration of flood damaged roads and bridges upon the Federal highway system where these conditions were extraordinary in their nature and where there were not reasonably available other Federal and State highway funds to meet the necessary outlay. During the period up to the time of the recent floods, only a little more than \$2,000,000 had been paid from this Federal emergency fund. This fund is available to meet half of the cost, so the bridges on the Federal aid system which were destroyed as a result of the extensive floods in a number of States, were rebuilt with modern structures at a cost under \$5,000,000. It is estimated that the amount

remaining in this fund will pay half the cost of restoring with modern structures most of the bridges on the Federal aid system which were destroyed in the recent extraordinary floods. So far as the information is available, no major structures of modern type were destroyed or seriously damaged. When such floods occur, almost without exception it is the old-time structures that are seriously damaged or totally destroyed. This does not mean that the loss of the facility to the community is not serious or the replacement costly, but that modern design is producing bridges that do withstand extraordinary floods. This is true, in a broad way, of modern high type road construction.

Beginning with the year 1927, when disastrous floods occurred in Vermont and other States, the Federal Government has since made extra appropriations paying half the cost of restoration of roads and bridges on the Federal highway system, due to extraordinary floods. In this period of nearly ten years, with these unusual flood conditions appearing in ten States, the total amount of these special appropriations is under \$12,000,000. While spectacular, the amount of the loss caused by these floods aggregates much less than the deterioration over many miles and wide areas caused by such climatic conditions as have prevailed during the preceding winter and spring.

From the losses and serious inconveniences that have been imposed by the damage and destruction from the recent highly adverse winter conditions, can be secured the silver lining of the hope that there will be restored to an even balance with administrative expediency, sound engineering policies. In order to clear this statement it is necessary to review somewhat the changing policies as to the administration of our highways which have been gradually taking place over a period of years, and also, at the risk of getting into the deep water of a too technical discussion, some of the disclosures of highway research which should have a material bearing on future policies. The most important of these can be stated briefly.

(1) There is, and has been, a tremendous pressure upon public officials for the placing of surfaces upon a larger and larger mileage of our public highways for the use of the motor vehicle. This pressure has resulted in a large relative, and actual, increase in the mileage of the so-called low type roadways. This statement is not intended to be critical, except to the extent that the design and cost of these low cost roads have been forced below reasonably economical standards. The danger in this policy lies in the certain rapid increase of maintenance costs and the exclusion of necessary new construction.

(2) The policy here expressed of extending the mileage of new construction has been brought about by transferring large mileages, in some cases the total public road mileage within the State, to the

jurisdiction of the State, without an equivalent transfer of funds.

(3) Both of these policies, placing an enlarged commitment against the State highway funds, have been simultaneous with a diversion of income from the road users special taxes to other than highway purposes.

(4) All of these policies are tending to destroy the logical and necessary stage construction policy which was adopted by practically all of the States, by utilizing funds which should go to replace and to bring to more adequate standards the roads which have received the first stage improvement.

(5) Research in the fields of soil physics and of load distribution through pneumatic tires has developed to the stage of practical utility, so that the service of our highways can be greatly increased and the annual maintenance cost decreased, provided the administrative policies can be balanced against the engineering requirements making use of the scientific knowledge now available, even though the first cost is somewhat increased, particularly in the field of low cost improvements. At the meeting of the Highway Officials of the North Atlantic States in February, I reviewed some of the facts which, in my judgment, supported the above statements. For this discussion this data will be reviewed as concisely as possible.

Production of Roads.

For the pre-depression period 1925-1929, the State highway departments, with and without Federal participation in the cost, annually completed 27,640 miles of all types of construction. In the succeeding five-year period 1930-1934, the annual completion jumped to 37,582 miles, or nearly 10,000 miles per year above the preceding five-year average. For the last two years of the second period, 1933-1934, of an annual average completion of 36,012 miles, the Federal funds allotted to the States and administered through the Bureau of Public Roads, not including funds used by the States from other Federal sources, accounted for an average of 20,048 miles. The facts are not available as yet for the calendar year 1935, but the same relative results will undoubtedly be true, and also for the present year - 1936. Federal appropriations for highways have accounted for bringing the annual completion to this high figure. With the very large curtailment of Federal highway appropriations for this purpose which very soon must be faced, the production of roads by the State highway departments will be decreased by a large percentage. This will easily reach 30 per cent. Unless the diversion of the income from the gas and motor vehicle fees is

stopped and these funds restored to the highway departments, the construction program will probably fall off 50 per cent or more by next year.

This situation includes most of the States, and it is important to place these facts fairly before the general public, the State officials and the State legislatures. The Federal government has made a determined effort to hold employment in this field at a high figure. It can not be expected that Federal expenditures in anything like the scale of these immediate years will be continued. It is important that the heavy construction industries, skilled and unskilled workmen, and contractors, be kept employed, and much larger support funds must be provided by the States to continue this employment. This loss in State construction expenditures will not be made up from local road funds since these show average losses for the two-year period - 1933-1934 - of nearly one-half under the average for the 1925-1929 period.

The Rise in Maintenance and Miscellaneous Expenditures.

There has been a sharp rise in the expenditures for maintenance equipment, interest and miscellaneous items. The total State expenditures in 1934 for these purposes were nearly \$300,000,000. This rise in maintenance expenditures reflects the increased maintenance liability growing out of the increased use of the low cost type roads. The growth in mileage of such surfaces is bound to increase as the highway departments respond to the public pressure to extend these safer and more adequate types of surfaces. We must, therefore, face total increased maintenance expenditures, not only for this reason but also because there was an increase in net surfaced mileages for the five-year period, 1930-1934, of 80,664 miles of all types on the State highways.

Facing the Needs Honestly.

There can be only one honest conclusion drawn from these facts which are neither guesses nor estimates but are the summaries of the official records painstakingly gathered. The trend is markedly to divert the special road user taxes from the State highway departments and at the same time to add mileages beyond their ability properly to improve and maintain.

The dishonest answer is that we have enough roads and can take a road building holiday. This in the face of the fact that the average annual special taxes 1932-1934 were in excess of one billion dollars, paid by the road users with the sole justification that these special

taxes are levied and collected for the maintenance and extension of highway services and facilities.

It is a dishonest answer because obsolescence and depreciation do not indulge in holidays. In all seriousness, I record the fact that because of the public pressure for a rapid increase in the mileage of surfaced roads, the highway officials have been forced to spread the funds so thin that a very large part of the capital invested is now in jeopardy. Here are the facts. The so-called stage policy of road construction was, and is, sound, if its processes are carried into operations properly timed. Low cost surfaces must be strengthened and reconstructed within their reasonable life; otherwise their annual maintenance mounts to excessive costs while their salvage value is rapidly lost.

The State and Federal highway departments in adopting the policies to the extent they have, understood the underlying economics and proceeded in the faith that the increased earnings from the roads thus improved would prove a profitable investment and that they would be permitted to follow the logical course of using the increased income to strengthen and raise the low cost types to standards that can be economically maintained, but the earnings are being diverted and new mileages to be improved are being added.

To make the picture more definite, here is a statement of the conservative reconstruction needs of the highways only under the jurisdiction of the State highway departments.

1. Total surfaced mileage State highways . . . 271,614
2. Total unsurfaced mileage State highways . . . 52,698

Annual construction program required:	<u>Per yr. Miles</u>
3. To provide roadways on unsurfaced mileage in 10 years	5,269
4. To reconstruct low type existing mileage in 15 years	10,800
5. To reconstruct high type existing mileage in 40 years	2,740
6. Secondary surfaced roads under control of State highway departments	74,450
7. Unsurfaced	95,794

	<u>Per yr. Miles</u>
8. To provide roadways on unsurfaced mileage in 20 years	4,800
9. To strengthen and reconstruct low type mileage in 30 years	2,400
10. To reconstruct high type mileages in 40 years	<u>50</u>
 Total annual construction and reconstruction program required under State highway departments	 26,059

I make no claim for exactness in this summary. Most of you will make the criticism, wholly justified, that the life expectancy is too long because of the already long years of service of much of our surfaced mileage. There can, however, be no disagreement with the general conclusion that the annual construction and maintenance program that the State highway departments must carry on without the addition of a single new mile, is greater than for the pre-depression period 1925-1929, unless we are to wreck our highway finances on the rock of excessive maintenance costs. These are the requirements due to normal depreciation only. The factor of obsolescence, due primarily to increased volume and speed of traffic, will add another large increment of multiple-lane roadways, railway and highway grade crossing eliminations, and miles of realignment. The element of uniform safeness must be given major weight.

Extension of State Control to Secondary Roads.

In the three-year period, 1932-1934, there was an increase in the surfaced mileage of secondary roads under State control, of 51,000 miles. A number of States have placed all or a large part of the local roads under State control, and there is a growing sentiment in this direction. It is not, however, so well known, that in no case has the transfer of these largely increased responsibilities been accompanied by a transfer of the funds formerly used by the local officials upon these secondary roads.

The addition of this increased load to the revenues used for the more limited system of State highways would have stopped all important new construction in these States had it not been for the increased Federal appropriations. When these appropriations are no longer available, these States face the problem of not being able to finance any new construction.

The extension of State supervision or control over local roads is a policy that can be in the public interest, but as it has been put into effect it is not. Only the greatly increased inflow of Federal funds has covered the inevitable result.

A policy good in itself and worthy of public support has been so far thrown out of balance by two powerfully selfish motives.

There has been continuous pressure to place all roads under the State highway departments for the purpose of placing the cost of all highway improvement and maintenance upon the revenues from the road user, thus relieving other sources of revenue. There has also been the political motive to build the highway organization, - which to be successful must be non-partisan, - into a political machine. Thus we have had a marked trend in the inauguration of the two diametrically opposed policies which are full of disaster for the future of our highways - that of a large increase in the required expenditures and that of a large diversion of the road user funds to other purposes.

Increase in Surfaced Mileage of Secondary Roads.

One of the most striking developments of this present period is the accelerated rate in increase in surfaced mileage, largely of the low cost type, on secondary or local roads under the control of the local governmental units. For the five-year period, 1930-1934, this increase amounted to a total of 218,000 miles, nearly 212,000 of which were of the low cost type. This increase was nearly double that of the preceding five-year period, but it does not reflect a larger support by local units, - rather, greatly increased support from Federal funds from the Public Works Administration, the Federal Emergency Relief Administration and other Federal agencies established to provide employment.

The conclusion to be drawn from the foregoing is the pessimistic one that our rate of increase of surfaced mileage is too rapid to be sound. Since it is apparent that there will be for the immediate future a large program of improvement particularly to supply opportunities for employment, it would be wise to build highway grades that will provide adequate drainage and be capable of withstanding climatic conditions in that particular locality. The next step should be the stabilization of the soil subgrades by the scientific methods which have been reduced to practical usage.

If these two fundamental steps are taken the results will be much more satisfactory to the users and an insurance of reasonable maintenance costs built into the construction. It is only through subgrades that have been so designed and built that they will withstand the influence of the adverse climatic elements that we can safely proceed to the placing of any of the various types of wearing surfaces. Otherwise we will have maintenance charges which will increase at a continuously accelerated rate.

Coordination with Other
Transportation Facilities

The above presents the more pessimistic view of our present highway policies. The reverse of the picture is the splendid progress that is being made toward a more intelligent coordination of our transportation facilities. While coordination has been talked about, specific approach has not been so readily apparent and the program of coordination is taking angles that may not have been first thought of as important elements in such program. For example, nothing has been more productive of a growing friendly and intelligent working together of highway and railway officials, than the grade crossing elimination programs that have been made possible, starting with the Public Works program of 1933 where the construction costs were carried from public funds. The first authority to use Federal highway funds to pay the entire construction cost of eliminating hazards at railroad grade crossings was followed by an allotment from the present Emergency Relief appropriation of April 1935 of \$200,000,000 to be used solely for this purpose. These two programs, it is now evident, will eliminate approximately 3,000 of the most dangerous and economically important grade crossings in the United States, including about 300 to be reconstructed.

The highway and railway officials are working in close cooperation on the administrative and engineering details of the program. While the construction costs are provided almost wholly from Federal funds, all property and property damages are being carried by the States or localities and the railroads. These costs amount to a substantial contribution.

Careful attention has been given in the programming of highway funds, particularly that portion used for secondary roads, to reach shipping points on the railroads and to connect air fields with the improved highways.

One of the fundamental considerations of safe air operations is provision for emergency landing fields at reasonably frequent intervals. Since the air routes rather consistently follow highway routes, favorable consideration is being given by the highway officials to the development of emergency landing areas paralleling and contiguous to these highways. In discussions by air officials before the Commerce Committee of the Senate, emergency landing areas of this character have been designated "flight strips." As a matter of economy, areas to serve this purpose might well be included in an enlarged right of way, landscaped and used by the general public for roadside resting points and picnic grounds, which use would not be inconsistent with their availability as emergency landing fields provided the design were worked out to keep such sections of

the proper length and width free for use in emergencies. In fact it is quite logical for the main development and maintenance of air fields to be undertaken under the highway organizations since the two require about the same type of organization and operations. The fact that the highway departments are already set up for continuous maintenance of highways in every area ought to be used rather than a duplicate operation built for the maintenance of airports and emergency landing fields.

The progress in roadside planting and improvement is gratifying and the recreational values of highways are thus being raised rapidly. This has an important relationship to economy of maintenance since the seeding and planting in connection with proper grading prevents soil erosion. The important relationship between highway construction and maintenance and the erosion of the road-sides and contiguous areas is receiving definite attention.

Our rural areas constitute a frontier to be developed. They must be provided with certain facilities if they are to offer a modestly reasonable standard of living possibility. These minimum facilities are highways, consolidated schools, telephones, rural mail delivery, and available electrical power. It is doubtful if the most conservative will set a desirable standard lower than these requirements.

For each of these services not only the first costs but the annual continuing costs are largely determined by the number of people served per mile. To make possible these services there must be the most careful planning, in which the rural highways are of first consideration, to the end that the rural population shall be served with the minimum mileage possible.

The Secretary of Agriculture in July of this year appointed an Interdepartmental Farm Roads Advisory Committee, which has been giving careful attention to the subject, and this Committee has developed a preliminary set of principles as a guide for selection and improvement of the feeder road systems. The Secretary has also approved a comprehensive survey by the Bureau of Public Roads in cooperation with the State highway departments, of the whole road situation. Thirty-five States are definitely proceeding to carry into effect these basic studies, which have for their purpose an inventory of our existing facilities and the obtaining of all the factual information necessary on which to plan a sound development for the future. It is hoped to establish a rural road development program on such a sound basis of fact as to merit the faith and continuing support of the public.