

Federal-aid Highway Construction

The cooperation of the Federal government with the States in highway construction under the Federal Highway Act is generally regarded as one of the most successful undertakings of the Federal government in the field of public works. It has been continuously carried on under a basic law, sound in its fundamental principles, which it has been possible to modify appropriately to meet the necessities of a progressive program, fluctuating economic conditions, two war periods and an intervening period of peace.

The basic principles, preserved in every modification, which have been responsible for the success of the operation, are those which provide for -

1. The establishment and maintenance of a competent State authority as the agency of cooperation with the Federal authority.
2. Apportionment of Federal appropriations among the States in accordance with a prescribed formula designed to reflect relative road improvement needs.
3. A prescribed ratio of Federal and State financial contribution responsive to the capacities, responsibilities and interests of the two levels of government.
4. Restriction of expenditure to defined systems of the more important roads and establishment of an agreed and practicable program of continuing activity, with consequent prevention of ineffectual dissipation of effort.
5. The protection of State initiative in the undertaking of projects within the defined systems and agreed programs.

6. Federal approval of the purpose and character of proposed undertakings.
7. State advancement of the cost of work done and reimbursing payment of the Federal share on the basis of approved results only.
8. Assured maintenance by the States of the roads on which Federal funds are expended.

The persistent application of these principles over a long period, the generally harmonious Federal-State relations thereby established, and the obvious substantial worth of the results achieved are responsible for the frequent citation of the Federal-aid highway operation as a model of sound and effective cooperation between the Federal, State and local governments in matters of common concern.

Doubtless, another reason for the conspicuous success of the operation lies in the administration of the Federal participation by a single agency, prepared by long preliminary study of the needs and methods of road improvement, and continuing in uninterrupted responsibility since the inception of the cooperative undertaking. That agency - now the Public Roads Administration - was created originally in 1893 as the Office of Road Inquiry of the Department of Agriculture, was prepared for its later responsibilities by more than two decades of continuous study of highway conditions and needs in all parts of the country, was designated by the Secretary of Agriculture at the very beginning of the Federal-aid operation to be responsible for administration of the then untried experiment, contributed largely to the subsequent development of the proved policies and relations that now obtain, became in 1939 by the President's Reorganization Plan No. 1 a constituent of the Federal Works Agency, and continues at present in

responsible charge of all operations under the Federal Highway Act. It has won and held the high respect of the cooperating State agencies for its professional and administrative capacity and is regarded throughout the world as a preeminent authority on highway questions.

Federal-aid highway construction was inaugurated by the Federal Aid Road Act, approved July 11, 1916. With one exception, the sound principles previously referred to were established in the very beginning by that act. The single omission was the requirement of a restriction of the appropriated Federal funds to a limited and defined system of highways. It was a serious omission, quickly recognized as such. Under this law it was possible, on request of the States, to expend the Federal appropriations for improvement of "any public road over which the United States mails now are or may hereafter be transported, excluding every street and road in a place having a population of two thousand five hundred or more, except that portion of any such street or road along which the houses average more than two hundred feet apart."

If this definition had remained in the law the Federal funds since appropriated could have been dissipated in an unsystematic and hopeless endeavor to improve almost the whole of the country's three-million-mile total of rural roads without regard to the relative utility of the roads improved. No funds could have been applied to the improvement of any street inward of the extreme fringes of the cities. In both respects the law was defective.

The defect in respect to rural roads was promptly removed by the Federal Highway Act, approved November 9, 1921 which, confirming the other sound principles of the earlier law, required the designation of a Federal-aid highway system to consist initially of not more than 7 percent of the rural road mileage of each State, comprising the more important interstate and intercounty roads; and restricted the expenditure of all subsequent Federal-aid apportionments to that system. The same act provided for future increase in the size of the initial 7-percent system, but only when and as provision should be made for the completion and maintenance of the previously designated roads. It is this Federal Highway Act of 1921 that has remained, with amendment in detail, the basic statutory provision for all subsequent cooperative highway construction by the Federal and State governments.

The roads to comprise the system of Federal-aid highways were selected initially by the several State highway departments. The State selections were submitted to review by the designated Federal agency. That agency - then the Bureau of Public Roads of the Department of Agriculture - sought advice of the War Department as to the roads deemed by that Department to be of maximum military importance: advice which it received in the form of a map of the principal routes of military importance, approved and signed by General John J. Pershing, and by which it was guided in the approval of the Federal-aid system selections of the State highway departments. In this way the knowledge and experience of the most competent civilian and military authorities

was brought to bear upon the selection of the routes which were to form and which still form the Federal-aid highway system. On this system - now comprising 231,000 miles - all Federal-aid highway appropriations and matching State funds were expended without exception for a period of ten years. The matched Federal and State funds applied to the system were supplemented, moreover, with funds of the States independently expended on the same system; and the consequent marked concentration of effort resulted in a rapid and remarkable improvement of the principal rural highways of the United States - an improvement so rapid and remarkable that by 1930 it excited the admiration of the world.

Throughout this period every basic provision of the Federal Highway Act was retained without substantial change; the constancy of the provision limiting expenditure to the Federal-aid system was no exception to the general rule.

The Federal appropriations authorized were continuously apportioned among the States by the same unvarying formula - a formula by which the entire amount to be apportioned was divided one-third in the ratios of the areas of the several States to the total area of all States, one-third in the ratios of the populations of the several States to the total population of the United States, and one-third in the ratios of the mileage of rural delivery and star mail routes in the several States to the total mileage of such routes in the country, modified only as necessary to give to every State an amount not less than one-half of one percent of the total fund to be apportioned.

The share of the United States in the cost of the roads built was continuously limited to a certain amount per mile (an amount which did vary somewhat), and to 50 percent of the total cost, except that in States containing unappropriated public lands exceeding 5 percent of their land areas, the normal 50 percent could be increased by the addition of a percentage equal to half of the State's percentage of public lands.

The same relations in respect to powers of initiation and approval of projects were maintained between the Federal and State agencies; the same provision for State advancement and Federal reimbursement of the Federal share of cost was continuously effective; and every road improved was assured of continuous maintenance by the same stipulation and safeguard of the Federal law.

It was not until 1930 when, the depression deepening, the first break was made with these long-continued provisions. Then, with the purpose of restoring employment denied by a recessive economy, a Federal appropriation was apportioned in the customary manner to be used by the States in lieu of their own funds to match the other Federal-aid funds available. This was intended as a temporary advance to be repaid to the United States by deduction from future regular aid apportionments over a period of five years commencing in the fiscal year 1933.

A similarly intended advance of \$120,000,000 was made by the Reconstruction Finance Corporation under authority of the Emergency Relief and Construction Act of 1932, the apportioned amounts intended to be repaid by deduction from future Federal-aid highway apportionments beginning in the fiscal year 1935.

That only one instalment of the first of these advances was actually repaid, and repayment of the remainder of both was forgiven by the Hayden-Cartwright Act of 1934, was due to the increasing exigencies of the depression. The forgiven amounts, with the regular aid funds they were used to match, became in effect the first of a series of Federal appropriations made available for expenditure on highways without required matching by the States.

The previously unbroken fiscal-year series of authorized Federal-aid highway funds was suspended with the fiscal year 1933, and in the same year the National Industrial Recovery Act provided \$400,000,000 as an outright grant to the States to be expended for highway construction. This was followed by a similar outright grant of \$200,000,000 for highway construction made by the Hayden-Cartwright Act of 1934, and by a further grant of \$400,000,000 (\$200,000,000 for highway construction and \$200,000,000 for highway-railway grade crossing elimination) made by the Emergency Relief Appropriation Act of 1935. Together, these special depression emergency authorizations - wholly or largely 100 percent Federal grants in effect or intention - amounted to a total of \$1,200,000,000, made available between the years 1930 and 1935.

For the fiscal years 1934 and 1935 there was no regular Federal-aid authorization, but such authorizations were resumed with the fiscal year 1936, since which, excepting subsequent provisions for highway-railway grade crossing eliminations and war necessitated special highway construction, all Federal highway authorizations have been made available only on the basis of State matching required by the Federal Highway Act. The total of all Federal funds authorized for primary

Federal-aid highways, expendable under the State matching requirement, from those for the fiscal year 1917 to the last of such funds authorized for the fiscal year 1943, has been \$2,189,159,256.

To the extent that the 100 percent emergency grants of the depression period were made available for construction on the rural Federal-aid highway system, they were apportioned and expended in accordance with the historic provisions of the Federal Highway Act, substantially without change, except for the abandonment of the State matching requirement.

In part, however, these funds were made available for other purposes, associated at the time with the overmastering purpose to increase employment. These other purposes, three in number, were the construction of rural secondary or feeder roads, the construction and reconstruction of city streets, and the elimination of hazards at highway-railway grade crossings.

The first two of these were purposes for which there had been no previous provision in the Federal-aid laws, the second a purpose specifically denied in those laws. The previous omission and denial had been motivated by the intention to restrict application of the Federal funds to the limited primary system of rural Federal-aid highways until that system had been substantially improved. Now that initial objective had been nearly achieved and there was increasing demand for a widening of the Federal-aid program to encompass lesser rural roads and some streets in cities, at least the streets forming trans-city connections of the rural primary highways. The two purposes therefore were coming to recognition as desirable in themselves:

but their inclusion among the permitted objects of expenditure of the depression emergency appropriations was due less to their intrinsic desirability than to the desire to provide additional opportunities for employment in the smaller rural communities and in cities.

The elimination of hazards at highway-railway grade crossings, third of the other specific purposes of the emergency fund expenditure, insofar as the grade crossings were located on routes of the Federal-aid highway system, had not been excluded by the terms of the previous Federal legislation. It had been permissible previously to expend the Federal-aid funds for elimination of such crossings on the designated system; and some progress had been made in that direction; but the progress had been limited by the fact that State laws required a monetary contribution to any such projects by the affected railroads, and the railroads were often disinclined to contribute. When the emergency legislation was under consideration projects of this sort, involving usually the building of grade-separating bridges, were strongly recommended for their employment producing potentialities, and this recommendation was largely influential in the decision to allot to this specific purpose, from the funds for highway construction provided by the Emergency Relief Appropriation Act of 1935, the comparatively large sum of \$200,000,000. This sum was apportioned according to a revised formula involving State population with a weight of one-half, and mileages of the Federal-aid highway system and of all railroads in each State, each with a weight of one-fourth. Since these apportioned funds were available without State matching they could be expended, with substantial generation of employment, without

encountering the difficulties presented by the fund matching requirements of State laws.

While these new activities were begun primarily as employment measures, the need for them as highway improvement measures had recently been gaining increasing recognition. The near approach to completion of a serviceable pioneer improvement of the primary Federal-aid system had altered the condition that ten years before had made confinement of effort to that system an expedient policy. With these main rural highways, formerly the weakest links in the chain of highway transport facility, now substantially improved, it was considered possible and desirable to turn some attention to the feeder roads and main city arteries.

It was realized that a turning point had been reached at which it would be desirable to reconsider the general highway situation of the country and prepare for the plotting of new courses of policy. Accordingly, the Hayden-Cartwright Act of 1934 included a provision for expenditure of not more than 1½ percent of the Federal-aid appropriations of any year for the making of "surveys, plans, and engineering investigations of projects for future construction either on the Federal-aid highway system and extensions thereof or on secondary or feeder roads."

This authority, broadly interpreted, was used for the undertaking of comprehensive studies of the whole highway situation - studies known as Statewide highway planning surveys, begun in a few States in 1935 and rapidly extended until all States were included.

Four years of work in these surveys, cooperatively conducted by Federal and State highway authorities, developed for the first time in our history a comprehensive knowledge of the location, character and condition of every mile of rural road in the United States. They developed also a precise knowledge of the population directly served by every mile of road, and furthermore an accurate measurement and appraisal of the volume and character of traffic using every section of rural road in the country. Not stopping with the development of these physical and traffic facts the surveys went further to a determination of the revenues and expenditures for all classes of roads by all agencies of government, including municipalities, and to the laying down of bases for reliable estimation of future expenditure needed to keep up and desirably extend the existing improvement of roads and streets.

Evidence early amassed by these surveys supported the desirability of a continuance of the Federal participation in secondary and feeder road improvement and grade-crossing elimination, begun under the depression emergency appropriations. Thenceforward, accordingly, every new authorization of Federal-aid appropriations included provision for both of these purposes, the total of such authorizations (exclusive of those provided in the emergency acts) amounting to \$115,000,000 for secondary and feeder roads and \$190,000,000 for the elimination of hazards at railroad grade crossings.

Later findings of the planning surveys demonstrated more and more convincingly that the greatest needs of further improvement existing on the primary Federal-aid system, by that time inclusive of sections through the cities, legally eligible for Federal expenditure, were located on those sections and on sections adjacent to the cities. On these sections the traffic counts showed vehicular usage of the highest intensities and road and street capacities and conditions the least adequate - a virtually complete reversal of the situation existing two decades earlier, when these same sections were best improved of all highway facilities. Next to these urban and suburban sections in need of improvement, the surveys showed greatest needs to exist on certain through routes joining the larger cities throughout the country.

These facts were clearly brought to light and forcibly presented for the first time in the report of the Public Roads Administration, entitled Toll Roads and Free Roads, made in response to Congressional direction and published in 1939 as House Document No. 272, 76th Congress, 1st Session. This report recommended adversely to a proposal to build a national system of six transcontinental toll roads, and countered with favorable recommendation of a larger system of main interregional highways to be constructed under the Federal-aid plan as wholly adequate, toll-free highways.

With this recommendation in mind, and foreseeing the possibility of employing in the construction of such highways men and materials that might later be seeking employment, the President in 1941, shortly before the outbreak of the present world war, appointed a committee to

review the proposal that had been made and render a report upon the composition of such a system and the character of its required improvement. It was the President's thought that such a study would point the way to a useful, well-planned and employment-generating Federal expenditure in what was then still referred to as the post-emergency period.

The war shortly intervening, progress in all general highway construction was sharply interrupted by necessities of material and man-power conservation. Undertaking of new Federal-aid projects was halted almost immediately and the system of priorities instituted quickly put a stop to all but war-essential work both of construction and maintenance on the country's roads and streets.

With the probability of eventual war in prospect the Federal Works Administrator, at the President's request and through the Public Roads Administration, had made in cooperation with the General Staff of the Army a canvass of the country's highways in relation to their importance as military or strategic routes, and a new map of so-called strategic highways had resulted which, bearing the approval of the Secretary of War, served to bring up to date the earlier Pershing map. The same review also pointed to the probable necessity of a substantial program of construction on roads serving as the local approaches to military and naval establishments and war industries then beginning to develop.

With the onset of war this program assumed large importance, and construction of the so-called access roads, together with elimination of the more critical deficiencies of the strategic main highways became practically the whole of war-time highway building activity.

Shortly before the outbreak of war, the Defense Highway Act of 1941, approved November 19, 1941, had authorized appropriation of \$150,000,000 for the construction of access roads, and \$50,000,000 for the elimination of critical deficiencies of the strategic network. Both of these sums were made available for the acquisition of rights of way as well as construction of the strategic highways and local approach roads to concentrations of defense activity, and to pay all or any part of the cost of land as the Federal Works Administrator should determine to be necessary. One-half of the strategic network authorization was to be apportioned among the States in accordance with the long-standing Federal-aid formula and the other half was made available for use in the discretion of the Federal Works Administrator. Both parts were required to be matched by the States, but the normal share payable by the Federal government was raised to 75 percent, with permissible increase of this percentage in the "public-lands" States in a manner similar to that prescribed by the Federal Highway Act but resulting in percentage increments one-half as great.

The 50-million dollar authorization for strategic network construction has not been increased. The original authorization for access roads has subsequently been raised to a total of \$290,000,000, and the authorizations of both classes have been nearly exhausted in accomplishment of the intended purposes.

In addition to its provision for strategic network and access road construction the Defense Highway Act of 1941 made two other important provisions which were distinct departures from the pattern of previous legislation.

One of these was an authorization of the appropriation of \$10,000,000 for the study and construction of flight strips in cooperation with the Army Air Corps. Intended to insure the safety of both highway and air traffic by providing facilities for the emergency landing and take-off of aircraft adjacent to highways, the entire amount authorized, by reason of war necessity, was expended for the construction of facilities required for the dispersal and emergency use of military aircraft.

The other provision added in the Defense Highway Act - an addition illustrative of the manner in which amendment of the Federal highway legislation has kept abreast of, or anticipated changing needs - was an authorization of a \$10,000,000 appropriation, to be apportioned and matched in the customary manner, and expended for the making of advance engineering surveys and plans for future development of the strategic network and bypasses around and extensions into and through municipalities and metropolitan areas. It was anticipated that actual road construction to be immediately undertaken would be concerned with needs of the existing emergency, but that the post-emergency period would bring opportunity for the major improvements needed to remove the greatest deficiencies of the more important strategic highways - improvements requiring the most careful planning, such as the building of large bridges and the construction of transcity arterials and urban circumferential highways. While providing for the immediate construction of access roads and the most urgent of strategic network necessities, the act by this added provision supplied means for the advance planning of later more extensive and difficult improvements. It is believed that this was the first definite provision made for the advance planning of post-war public works of any kind, by the Federal Government or any other government. It permitted an early start to be made upon the planning of certain classes of post-war highway improvements. But its somewhat restricted application to the strategic

network and particular urban projects limited the rate at which the authorized funds could be utilized.

Meanwhile, war restrictions prohibiting the use of Federal-aid construction funds authorized for the fiscal years 1942 and 1943 for the intended construction purpose, and the need to be ready with completed plans and other preparations for a prompt post-war resumption of postponed improvements assuming greater importance, Public Law 146 - 78th Congress, approved July 13, 1943 provided for use of the unobligated balances of construction funds for such preparatory purposes. It provided first for the use by each State of an otherwise unobligated amount not exceeding the State's apportionment of a national total of \$50,000,000 for the general and specific planning of post-war improvements of roads and streets of all classes. It further provided for the alternative or additional use of the unobligated funds to pay for rights of way for such construction as a part of the cost thereof. This latter provision, the importance of which had been stressed in the report on Toll Roads and Free Roads, was another decided and remarkably foresighted departure from the previous pattern of Federal-aid legislation. It is now embodied in the legislation with continuing effect. If allowed to remain it will greatly facilitate a proper planning of some of the most important of future projects, particularly those located in and near cities, involving necessary large and expensive land acquisitions. Without the Federal participation which this provision permits, such highly necessary projects may be

either discouraged or inadequately developed by reason of the inability of the cities alone to meet the heavy land costs entailed.

Public Law 146 also looked to the future in another of its provisions - a provision authorizing and directing the Commissioner of Public Roads to investigate the need for a system of express highways throughout the United States, and report to the President and Congress within six months of the law's enactment. This direction was practically identical with the President's request made of the committee appointed by him some two years earlier for a report on an interregional highway system. The Committee, known as the National Interregional Highway Committee and under the chairmanship of the Commissioner of Public Roads, had been carrying on an intensive study which was nearing completion. The Commissioner of Public Roads was in complete accord with the findings and conclusions of the study. The purposes of the Presidential and Congressional directions were accordingly complied with in a single report entitled Interregional Highways which was submitted to the President on January 5, 1944 and by him transmitted to the Congress with his approval on January 12.

The report, published as House Document No. 379, 78th Congress, 2nd Session, recommended a defined system of about 34,000 miles of important intercity routes and an additional undefined mileage of local distributing arteries at the connected cities totaling an estimated 5,000 miles. It proposed that the recommended routes be submitted to study by the State highway departments and that provision be made by Federal law for the official designation of the recommended routes or preferred alternates through cooperative action of the State and Federal authorities.

Although the extent of the system recommended would represent little more than one percent of the total existing mileage of roads and streets, the report estimated that the system would serve, when adequately improved, at least 80 percent of the total highway transport movement of the country.

The Committee and the Public Roads Commissioner joined in the recommendation of a high-standard improvement of this interregional system in a reasonably brief post-war period to be determined by the rate of accrual of reconstruction necessities on existing roads approximating the location of routes of the system. This recommendation anticipates that the desirable improvements will be made under a variety of auspices - in part by the States with Federal aid, in part through Federal, State and local cooperation, in part by the States and municipalities acting jointly and independently. The probable rate of essential expenditure under all auspices was estimated at \$750,000,000 a year.

This sum, large as it is, the report argued is not greater than the demands of safe and convenient traffic facilitation will require and not greater than the tangible economic benefits that would derive from the improvement.

It was not proposed to carry forward the improvement of the interregional routes at the expense of essential improvements of other portions of the highway system. On the contrary it was specifically

advocated that a proper balance be maintained in the total of all post-war highway undertakings between improvements projected on all classes of roads and streets. Such a balanced program, it was estimated, would require a total annual highway expenditure in the post-war period of not less than 3 billion dollars for all needed construction and maintenance, a total with which the proposed interregional system expenditure would be in reasonable proportion. The 3-billion dollar total expenditure was regarded as well within the supporting ability of a sound post-war national economy, and not supportable only, but perhaps actually essential, as part of the total construction industry dollar volume required for the maintenance of a desirable post-war level of national income.

The Interregional Highway report and the accurately informative highway planning surveys upon which its proposals were based have had a profound effect in determining the character of preparations now being made for highway improvement in the post-war period. Their effect is manifest in the character of detailed planning completed and in progress by all agencies of government. It is manifest in the terms of bills now pending in both Houses of Congress which, as finally enacted, will establish the character and extent of the early post-war Federal-aid program.

As of July 31, 1944, reports received from all State Highway departments, 593 cities, and 731 counties, and transmitted by the Federal Works Agency to the Special Committee on Post-War Economic

Policy and Planning of the House of Representatives, showed that plans had at that time been completed for post-war bridge and highway construction estimated to cost \$487,546,000. At the same time the same respondent agencies reported other bridge and highway planning in the design stage of progress for additional construction estimated at \$1,428,544,000, still other planning in the preliminary survey stage for an additional estimated construction volume of \$2,124,539,000, and planning in the idea stage for another \$4,239,468,000 worth of construction. It is evident from these reports that highway construction is being made ready for prompt post-war execution in a volume compared with the planned volume of other classes of public works in approximately the same 50-50 relation that has been consistently maintained between highway and other public works executed over the last two decades.

The bills pending in the two Houses of Congress differ in detail but essentially agree in most matters of principle. Both bills make substantial provision for Federal participation in construction on the Federal-aid highway system, on secondary and feeder roads and on roads and streets in urban areas. Both provide for the expenditure of the enlarged secondary road funds which they would authorize on a designated system of such roads; and both provide for the official designation of an interregional or interstate highway system consisting of not more than 40,000 miles. Both would provide for the appropriation of Federal funds in enlarged amounts for the first three post-war fiscal

years. The House bill continues in effect the highly desirable provision of Public Law 146 permitting Federal participation in costs of rights of way; the Senate bill unfortunately omits that provision. The Senate bill (S. 2105) has been passed; the House bill (H R 4915) has been reported favorably by the Roads Committee but has not yet been brought to the floor.

Both bills contain substantial continuing provision for the construction of national park highways and for national forest highways, roads and trails, for which two classes of roads previous authorizations total respectively \$103,428,635 and \$159,100,000.

Both bills also empower the Commissioner of Public Roads to cooperate with the State highway departments and any Federal agency in the location, development, construction and maintenance of flight strips adjacent to public highways in order to insure greater safety for traffic on the public highways by providing additional facilities for the landing and take-off of aircraft.