DEPARTMENT OF ECONOMICS, FINANCE AND ADMINISTRATION

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RECENT TRENDS IN HIGHWAY BOND FINANCING

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SYNOPSIS

A REVIEW of the principles of public credit as applied to highways indicates that bond-issue financing can be used most advantageously when unusually large outlays are required for needed highway improvements and current revenue financing is insufficient to advance the program at a reasonable pace. Under these circumstances it is probable that the interest cost of the bonds will be overbalanced by the cost of stopgap improvements that would be necessary under a long-term current-revenue program and, if not, by the inclusion of some portion of the savings accruing to motorists and commercial users from earlier completion of the improvements.

The postwar need for highway modernization has caused an increasing trend among the states toward the use of credit financing. During the 5-year period, 1946 to 1950, the states, including special state authorities and commissions, issued $1,059,000,000 in highway bonds (not including refunding issues); the counties and other local rural units issued $444,000,000; and the urban places $685,000,000, making a total for the period of $2,188,000,000. The amount of all highway and street debt outstanding at the end of 1950 was approximatly $4.5 billion. The latest available figures for 1951 indicate that approximately $460,000,000 in state highway issues alone were sold in that year. Among bond issues at the state level the most noteworthy of recent developments has been the use of bond financing in the construction of toll roads. To a total of $54,000,000 in toll-road bonds outstanding at the end of 1945, $449,000,000 were added during the 6-year period from 1946 to 1951; $12,000,000 were retired, leaving $491,000,000 outstanding at the end of the period. Toll-bridge bonds increased in amount outstanding from $315,000,000 to $445,000,000 between 1945 and 1951. Toll-free state issues outstanding at the end of 1945 were $1,269,000,000; $781,000,000 were issued during the period and $539,000,000 were redeemed, leaving $1,511,000,000 outstanding at the end of 1951. Among toll-free issues there was a notable increase in the use of limited-obligation bonds, secured by a pledge of the proceeds of road-user taxes, the amount outstanding increasing from $97,000,000 to $320,000,000 during the 6-year period.

The study of individual issues in numerous states discloses wide variations in method and a tendency to experiment with different forms of credit financing. The toll-road movement continues vigorously; but two states, New Hampshire and New York, have taken steps to avoid the high debt-service charges associated with toll revenue-bonds by the use of general-obligation financing. Limitations on debt and the difficulties of amending state constitutions have been avoided in some states, notably Florida and Pennsylvania, by the creation of special state authorities with the power to borrow. In other states the credit of counties and cities is utilized in the development of urban expressways and limited-access highways, by the issue of limited-obligation bonds secured by road-user taxes and other pledged revenues. Traditional methods of state-highway bond financing are being used with conspicuous success in a number of states, among them Maryland and Massachusetts; but even in this field a choice is offered between limited-obligation and general-obligation bonds. North Carolina and West Virginia differ from other states in this group by using their bond-issue funds to improve their secondary-road systems.

Only time and experience can show which of these diverse methods of credit financing are most suitable in the highway field. Current examples of the success of toll-free financing of major improvements, and efforts toward the prudent and economical financing of toll facilities suggest that, in the long run, the true principles of public service will prevail over any tendency to exploit the money-making potentialities of traffic demand.

● POLONIUS SAID, "Neither a borrower nor a lender be," which is sound advice to keep a man out of trouble, but also out of business; for credit is the foundation for the structure of modern commerce and industry—and that of modern governments as well.

It is unfortunately true that individuals, corporations, and governments not infrequently make unproductive uses of credit. Very often such uses are justifiable, or indeed inevitable. A man faced with a family emergency may have to go to the bank or finance company. A business in financial difficulties may succeed in floating a loan to tide it over until better times. A nation may have to finance a war; or, to give an example in our own field, a highway department may find it necessary to finance its current, normal program by the issue of tax-anticipation debentures—in other words, to pay for this year's work out of next year's revenues, or those of a later year. Such uses of credit cannot be condemned; they may even be termed productive in that they further necessary or desirable objectives, although they do not represent positive productive action.

In the field of business and industry the classical example of the productive use of credit is that of the enterpriser who borrows money to build or expand his plant, in order to derive profit from the manufacture and sale of a commodity. By this means he not only lines his own pockets but contributes to the wealth and well-being of the community. The man who mortgages his future income to provide a house for his family is productively using credit; for he enhances the security and the living standard of his family, and also makes a small contribution to the national wealth. The financing of automobile purchases and the installment buying of household appliances are also examples of productive borrowing, although, like all other uses of credit, they may, under certain conditions of the economy, be overextended.

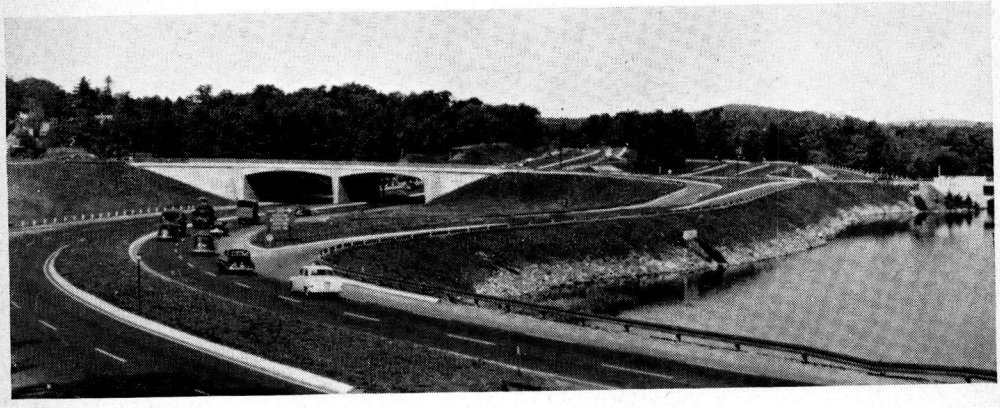

Figure 1. Massachusetts Route 128 at Weston.

Can credit be used productively in the highway field? In private industry the essential mark of productivity is the wedding of *capital* with *know-how*. Can such a fruitful alliance be effected in the production of highway improvements?

Our first example of productive borrowing for highways is the notable achievement in building the controlled-access Massachusetts State Route 128 around Boston, though a Bostonian might well be puzzled as to why anyone would wish to bypass that busy center of culture and industry (Fig. 1).

Figure 2. Maryland: Chesapeake Bay Bridge.

Figure 3. New Hampshire: Turnpike interchange and toll-house.

There is variety, and inevitable controversy, in the purposes and procedures of highway borrowing. The use of toll-revenue bonds to finance the spanning of great rivers and other bodies of water is a time-honored practice. Among recent toll-crossing projects is the Chesapeake Bay Bridge, scheduled for completion next summer (Fig. 2). Much more heated debate centers about the financing of toll roads, as distinguished from crossings. Among these, the New Hampshire Turnpike (Fig. 3) is a toll road with a difference, in that it is being financed with general-obligation issues of the state.

There is controversy in toll-free financing also. Although bond issues are recommended chiefly for arterial highways, North Carolina has entered upon a bold venture in the credit financing of a program of secondary-road improvements (Fig. 4). The State of Michigan, has made legislative provision for the issuance of "limited-access-highway revenue bonds," payable out of road-user tax receipts and other pledged revenues of the governmental units cooperating in the project (Fig. 5). Pennsylvania, in addition to its turnpike exploits, has created special authorities armed with the power to build highway facilities, issue bonds, and rent the completed highways to the state highway department in return for state highway revenues with which to pay off bonds and interest (Fig. 6).

These are only a few examples of the use of credit in the financing of highways today. Are these activities justified? If so, what are the circumstances which justify them; and under

Figure 4. North Carolina, secondary road.

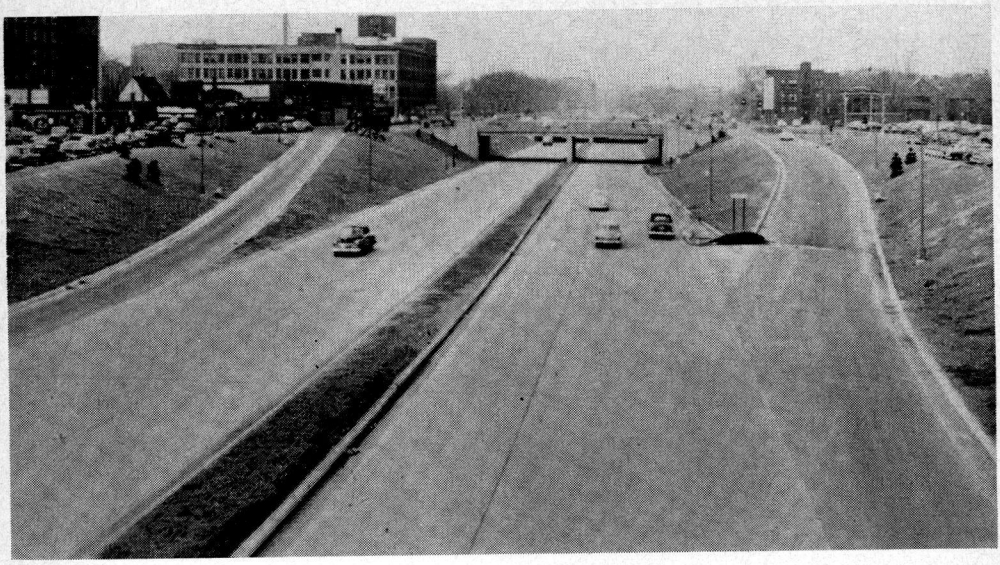

Figure 5. Michigan: John C. Lodge Expressway.

Figure 6. Pennsylvania: Schuylkill Expressway.

what differing circumstances would the use of bond-issue financing in highway work be inadvisable?

PRINCIPLES OF PUBLIC CREDIT AS APPLIED TO HIGHWAYS

The venerable custom of borrowing money and paying interest on it has its motivation in the simple economic fact that money in hand is always of more value than an equal amount in future prospect. This is quite as true of government as it is of individuals and corporations. As one authority (*1*) puts it: "If the earlier use of money is more valuable than the interest that must be paid, then, as a general rule, it is unobjectionable for the government to borrow. Indeed, it may not only be wise and prudent, but also highly necessary. So far as the use of money is more valuable at a given time than its interest cost, there is, then, no pronounced difference between public and private credit." The existence of a net advantage to be derived by the use of the funds now rather than in the future is the criterion of justification for public borrowing.

It may be contended that the same advantage may be derived by increased taxation, however heavy, to provide the needed funds. This viewpoint tends to ignore the fact that the taxpaying public, which either directly or through legislative action must approve the loan, is one of the parties to a governmental credit transaction. By its ballots or through its representatives it must decide whether to forego the prospective advantage altogether; to finance it out of current, and perhaps very burdensome, taxation; or to finance it by means of a loan, thus making the payment out of dollars of which the present value is less than that out of which current taxes must be paid. The public, as well as the immediate parties to the loan transaction, is affected by judgments regarding the value of money in hand relative to money in prospect.

In applying these principles to the problems of highway-bond issues we must find the answers to two questions: First, what are the advantages to be derived from the credit financing of highway improvements; and second, under what conditions are these advantages likely to be realized to the fullest degree? The advantages resulting from any justifiable highway improvement include the following: reduction of vehicular operating costs, including a reasonable assignment of values to time costs; reduction of accidents and their costs; and a lessening of the interruptions to the steady flow of traffic and, therefore, of the strains and discomforts of driving. That this last factor, subjective though it is, may have important dollar values is beginning to be recognized by research engineers. In addition to these direct vehicular benefits there are the developmental advantages derived from highway improvements by both rural and urban communities. Since all of these benefits will be realized at earlier dates under an accelerated bond-issue program, their accumulated values over a given time will be much greater than under a long-term current-revenue program. The bond issue will be justified if the excess benefits due to acceleration (insofar as they can be evaluated) are greater than the interest charges on the loan.

The principle of acceleration is the keynote to the credit financing of highways. It should be clear that bond issues cannot profitably be used to finance a normal, continuing program of replacement and expansion. Over the long run, current revenues must be sufficient to defray the costs of such a continuing program; and in that case interest is only an added cost. The most favorable condition for credit financing is that of a truly accelerated program, which contemplates a short period of abnormally high capital-outlay expenditures, during which the highway plant will progress rapidly toward a condition of adequacy. A subsequent lull in construction activity, during which the need for replacements will accumulate very slowly, will provide an opportunity for retirement of the bonds.

It is hardly necessary to say that a great many states today need just such an accelerated program—and, as we shall see, a number of them are getting just that treatment. With an accumulated backlog of needed improvements inherited from the war years and increasing each year with the mounting demands of traffic, the need for greatly increased expenditures is recognized in almost every state, and that in face of the fact that the current defense emergency may compel us to slack off for a time. Some states may be able to solve their problem by moving to a higher level of normal expenditures, with increased highway taxes. More and more, however, seem to be moving in one way or another toward

credit financing, particularly of their major arterial routes.

Under the circumstances of a program stepped up in tempo by a bond issue, the penalty of interest payments may not be as severe as is ordinarily supposed. The necessity for temporary or stopgap improvements is minimized and the schedule of replacements is profoundly altered, with the result that the capital outlay required for the short-term bond-issue program will be considerably less than that required for the long-term current-revenue program. The possibilities in this situation were perceived by Bertram H. Lindman, who acted as consultant for the Ohio Highway Fiscal and Tax Study. He suggested the possibility that the 20-year program recommended for all roads and streets in that state could be modified by introducing a 10-year bond-issue program for the state rural and urban system

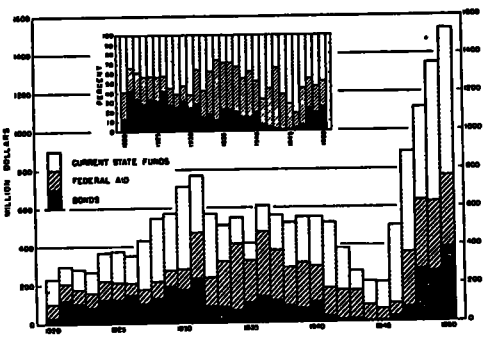

Figure 7. Cost of state highway construction analyzed by source of funds, 1920–1950.

and retiring the bond issue during the second 10 years, without increasing the annual revenue requirements of the total road and street program. At Lindman's request, calculations were made at the Bureau of Public Roads to test the idea; and these calculations, subject to the soundness of the given data, confirmed the validity of his suggestion. The objective would be accomplished by a bond issue of about $607,000,000, issued in annual installments during the 10-year construction period, and retired, with interest at 2 percent, during the second 10-year period. These findings and the supporting calculations have been made the subject of a bulletin recently published by the Ohio Department of Highways (*2*).

Historical Background

Bond-issue financing has been an important but not a dominant factor in highway finance during the past fifty years. An indication of the part it has played in the financing of State highways in the period 1920–1950 is given in Figure 7, which shows the amounts contributed to state-highway construction out of bond issues, out of federal funds and out of current income of the states. This is not quite the whole story, as the current funds in the earlier years include contributions from the counties and other local units, largely from their own bond issues, for state-highway construction.

During the period from 1921 to 1930, bond proceeds contributed from 25 to 40 percent of all state construction funds. This was the first great period of accelerated bond-issue financing. In Illinois, with bond authorizations of $160,000,000, Missouri, with $135,000,000, and North Carolina, with $115,000,000, bond issues formed the bulk of highway construction funds during the decade, and provided the impetus for the modernization (for that time) of their state highway systems. During this period or earlier, similar programs were adopted in other states, including California, Maryland, Massachusetts, and Oregon. Numerous other states issued bonds during this period; and still others utilized the credit of the counties and other local units in the construction of what became their state-highway systems.

The period of the 1930's produced slightly diminished state-highway borrowing, although the total included such large revenue-bond issues as those for the San Francisco Bay bridges, the Pennsylvania Turnpike, and the Port of New York Authority's bridge and tunnel program. The dominance of federal-aid funds during this depression and recovery period reduced the relative contribution from bonds to about 20 percent. From 1941 to 1950 there were two contrasting developments: First, the cessation of normal highway construction during World War II; and second, the post-war period of accelerated construction expenditures, characterized by an increase in highway borrowing.

A perspective on the history of credit financing for rural roads is afforded by Figure 8, in which the bar diagrams give the amounts of highway bonds issued by 5-year intervals from 1901 to 1950. The cross-hatched bars indicate state issues and the dotted bars denote bonds issued by the counties and other local rural highway units. At the top of each state bar, for years subsequent to 1915, is shown the amount of reimbursement obligations assumed

by the states in the 5-year period. In a considerable number of states, prominent among them being Arkansas, Florida, Iowa, Minnesota, South Carolina, Tennessee, Texas, and Wisconsin, the state government has, by various methods, assumed the obligation of reimbursing the counties and other local units for their contribution to the cost of state highways, or of roads which subsequently became state highways.

The cumulative values of state-highway bond issues are shown in the full line in Figure 8; the broken line shows the same trend for county and local issues. It is of interest to note that the two cumulative curves cross in the the 1931–35 interval. During the early years county and local issues dominated the field; and only gradually gave ground to the mounting total of state-highway bond issues. At the

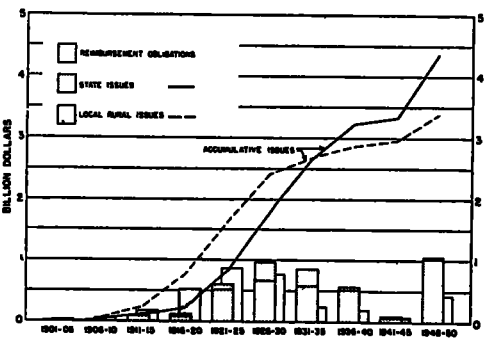

Figure 8. Highway bonds issued by the states and local rural units, 1901–1950.

end of 1950, the outstanding highway debt of the states was $2,141,000,000 and that of the counties, towns, and townships was $904,000,000. Urban highway-and-street debt, about which data for early years are incomplete, was about $1,500,000,000 at the end of 1950. Thus the total highway debt outstanding at that time was approximately $4,500,000,000.

Credit Financing of Motor Vehicles and Highways

Figure 9 gives a rather interesting, although unorthodox, comparison of highway bond financing with the use of installment credit to finance the purchase of passenger cars (*3*) during the years 1946 to 1950. The dotted bars represent the total amount of installment credit issued on new and used cars during these years; and the dash line gives the amount outstanding at the end of each year. Similar values are given for the total of state, county, and municipal highway debt during the same years by the cross-hatched bars and the full line. The issuance of short-term installment debt is not strictly comparable with long-term issuance; but it should be observed that outstanding installment debt on new and used cars was approximately equal to outstanding highway debt at the end of 1949 and exceeded highway debt by nearly $1 billion by the end of 1950. This comparison suggests that if the nation's motor-vehicle owners are able to support the carrying charges on this volume of installment credit, the services of the highway debt, even if it were materially increased, should not be unduly burdensome.

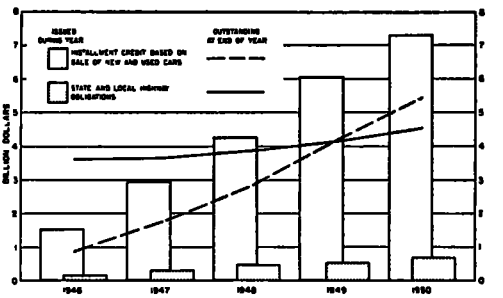

Figure 9. Borrowings for passenger cars and highways.

Interest Rates

In recent years it has been possible to market general-obligation state highway bonds at very low interest rates, generally ranging between 1 and 2 percent; and limited-obligation bonds, secured only by the road-user tax receipts, have enjoyed similar rates. Toll-revenue bonds have generally been marketed at somewhat higher interest rates, often running between 2½ and 4 percent. The curve in Figure 10 shows the variation of the Index of the Municipal Bond Market, maintained by the magazine *The Bond Buyer*, for the period 1900–1951. This index of calculated yields is the result of averaging the market values of general-obligation bonds of selected states and incorporated places. Primarily an index of market value (in terms of rate of yield), it is also reasonably indicative of the rates of interest at which municipal securities could be sold at the times shown on the chart.

From about 1910 to the early 1930's, rates

of yield averaged somewhat above 4 percent, shooting upwards during the depression of 1921 and the much more severe one of 1930–

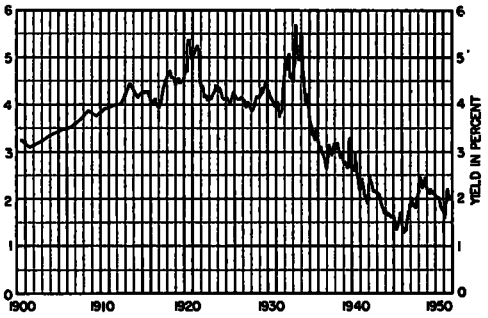

Figure 10. The bond buyer's index of the municipal bond market.

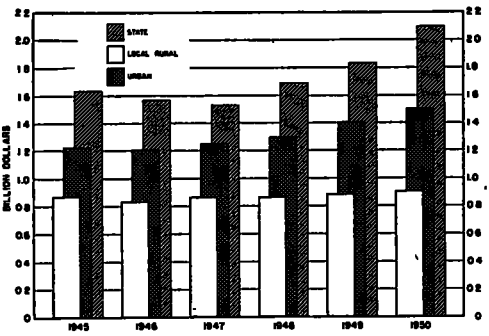

Figure 11. Gross highway debt outstanding, 1945–1950.

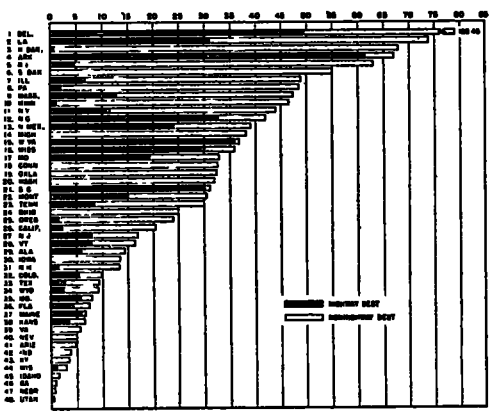

Figure 11A. Net state debt per capita for highway and non-highway purposes, 1950, exclusive of debt for toll facilities.

1933. Since 1933, however, there has been an almost steady drop in rates, although there is some evidence of an upward trend since 1945. The vagaries of the bond market are beyond the scope of this paper. It may be said, however, that this index reflects not only the general trend of the money market during the period covered; but also changes in factors peculiar to municipal securites, such as federal income-tax rates, as they affect the desirability of tax-exempt securities, and the faith of investors in the security of municipal bonds as compared with other forms of investment.

Postwar Period in Credit Financing of Highways

During the five-year period 1946–1950, the states, including special state authorities and commissions, issued $1,059,000,000 in highway bonds (not including refunding issues); the counties and other local rural units issued $444,000,000; and the cities and other incorporated places issued $685,000,000. The combined total was $2,188,000,000 in highway and street issues during this period. Figure 11 gives the gross highway debt outstanding at the end of each year from 1945 to 1950, subdivided into state, county and other local rural, and urban highway obligations, respectively. It will be observed that there was little net change in the local rural debt, retirements nearly balancing the issues of $444,000,000. Urban debt outstanding increased from $1,233,000,000 at the end of 1945 to $1,512,000,000 at the end of 1950; and state highway debt from $1,638,000,000 to $2,141,000,000. These large increases reflect the postwar effort to provide adequate transportation service on main rural highways and urban arterials. The values given in Figure 11 include the obligations of special authorities, such as those in charge of highway-toll facilities.

For the country as a whole, the highway debt outstanding at the end of 1950 is not of alarming proportions. It is slightly more than the total of all road and street expenditures of $4,270,000,000 in the year 1950 and slightly less than the $4,532,000,000 spent for all highway capital outlays during the two years 1949 and 1950. In the individual state, however, decisions regarding a prospective bond issue may be profoundly influenced by the amount of highway debt outstanding, or by the amount of total debt, highway and non-highway. Figure 11A gives in bar-diagram form the amounts of the per-capita state debt in all states and its division into highway and non-highway components. Toll facility issues have been excluded from this chart.

All states have some net debt, but in nine states per-capita total debt is $5 or under. On the other hand, six states have per-capita total debt of $50 or over. Sixteen states have no state-highway debt other than toll-revenue bonds. The state having the highest per-capita highway debt is Arkansas, with $61. It is followed, in order, by six states, Delaware, West Virginia, North Carolina, Louisiana, Mississippi, and South Carolina, having values between $25 and $50. State debt as a whole, highway and non-highway, is not particularly burdensome in most states, the per-capita value being less than $25 in half the states and less than $35 in two thirds. Of the total state debt in all states, including limited obligations and reimbursement debt but not including toll-revenue bonds, highway obligations constitute 30 percent

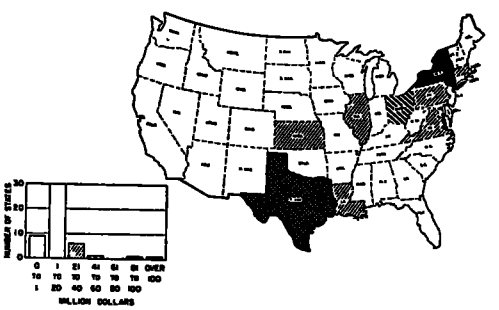

Figure 12. Total urban borrowings for street purposes, 1946–1950.

Figure 12 is one of three maps depicting the amounts of borrowing for highways in the period 1946 to 1950. This one pertains to highway and street bonds issued by the cities and other urban places. All but one state reported some urban borrowing for highways in the period. The distribution seems to be more or less in proportion to the wealth and industrial development of the states, although the magnitudes in some states, such as New York and Texas, definitely reflect their recent activity in urban arterial improvements.

Figure 13 gives a similar portrayal of county borrowings for highway purposes in the period 1946 to 1950. Eight states account for 80 percent of the county and local rural borrowings during the 5-year period, with the Texas counties alone issuing 31 percent. In an effort to keep abreast of the expanding economy of that state the counties of Texas have resorted to credit financing for highways on a large scale. Of the other seven states, certain counties in Illinois and Georgia have recently participated in large expressway projects, and the local units of Alabama, Mississippi, New Jersey, New York, and Pennsylvania have traditionally borrowed to finance capital outlays. Of the remaining states, the local units in 24 reported highway borrowings of less than $1,000,000. Of these, 10 reported none and 8 less than $500,000.

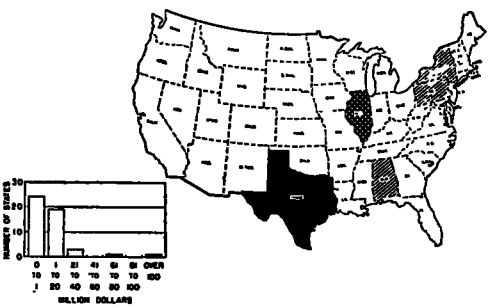

Figure 13. Total county and local rural borrowings for highway purposes, 1946–1950.

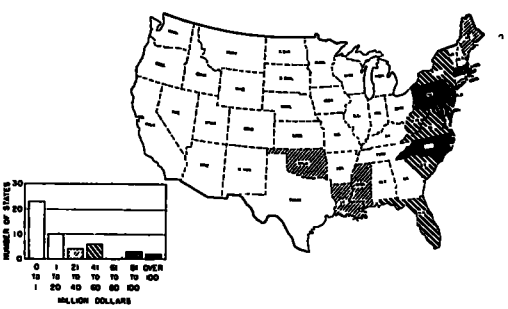

Figure 14. Total state borrowings for highway purposes, 1946–1950.

Figure 14 gives the geographic distribution of state borrowings for highways during the 5-year period. There is a not unnatural concentration along the Eastern Seaboard, where so much of the population, industry, and heavy traffic volume of the nation are concentrated. Five states, Maryland, Massachusetts, New Jersey, North Carolina and Pennsylvania, account for 55½ percent of the state-highway bonds (including those of state toll-authorities) issued during the period. The Atlantic Seaboard states account for 80 percent of the total. During the 5-year period 23 states borrowed less than $1,000,000 for highway purposes.

Of these, 20 incurred no highway debt whatever. Missouri and Texas assumed small amounts of reimbursement debt, and New Hampshire issued $650,000 in toll-revenue bonds.

The array of states would be modified somewhat if 1951 issues had been included. The latest available information indicates that more than $460,000,000 in state-highway obligations (including the issues of state toll-

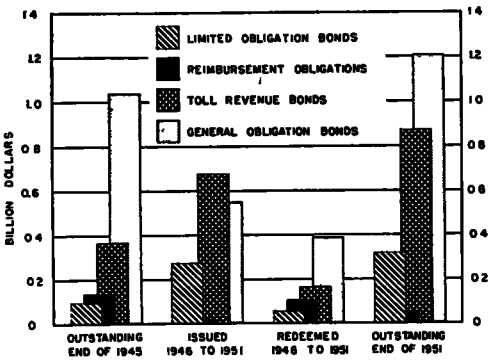

Figure 15. Types of state-highway debt

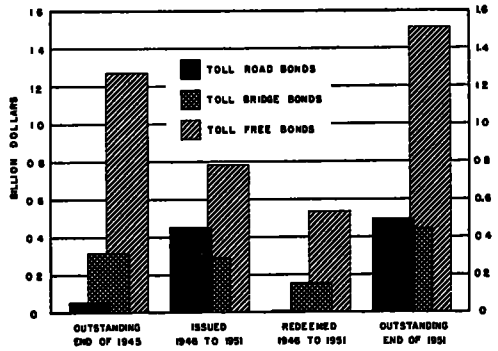

Figure 16. Purpose of state-highway debt.

authorities) were sold during that year. Of this total, $186,000,000 were toll-road and toll-bridge bonds and $274,000,000 were toll-free issues of various kinds.

Figure 15 portrays, in a rather novel arrangement, the changes that have occurred in the types of state highway debt during the period from the end of 1945 to the end of 1951. Four types of state-highway obligations are considered; in descending order of the amounts outstanding on December 31, 1945, they are as follows: regular general-obligation state-highway bonds, toll-revenue bonds, reimbursement obligations, and limited-obligation bonds (secured by proceeds of road-user taxes). The groups of bars show in turn: outstanding at end of 1945, issued in period, redeemed in period, and outstanding at end of 1951. Some dramatic changes occurred during the 6-year period. Although regular general-obligation issues increased substantially from $1,040,000,000 to $1,203,000,000, toll-revenue issues, of which $674,000,000 were issued in the period, were more than doubled in amount outstanding, changing from $363,000,000 to $871,000,000. Reimbursement obligations, the majority of which were redeemed during the period, ceased to be a significant factor. Limited-obligation bonds gained greatly in popularity, changing in amount outstanding from $97,000,000 in 1945 to $320,000,000 at the end of 1951.

A somewhat different slant on the developments of the period 1946 to 1951 is given by Figure 16. The general layout is the same, outstanding, issued, redeemed, outstanding, but the comparison here is between toll-road bonds, toll-bridge bonds, and toll-free bonds. The growth of toll-road bond financing is shown strikingly in this graph. To an amount of $54,000,000 outstanding at the end of 1945, issues of $449,000,000 were added during the period. Redemptions—perhaps significantly—show only a thin black line of about $12,000,000, leaving $491,000,000 outstanding at the end of the 6-year period. Although a number of important structures were built or put into construction during the period, toll-bridge bonds gained only moderately ($315,000,000 to $445,000,000), because of the substantial amount of bonds redeemed. Toll-free bonds seem to bulk larger when general-obligation and limited-obligation issues are added together.

Toll-Free Issues, in Millions

Outstanding, end of 1945	$1,269
Issued in period	781
Redeemed in period	539
Outstanding, end of 1951	1,511

RECENT EXAMPLES OF CREDIT FINANCING IN THE HIGHWAY FIELD

The postwar period has been one of variety and experimentation in the credit financing of highways. Only by experience over a period of

years can the states and their political subdivisions determine the most suitable methods.

Toll Bridges and Other Toll Crossings

Large bridges and other crossing facilities, because of their strategic or semimonopoly position on the one hand and their costliness on the other, have been widely accepted as suitable for toll-revenue financing. With respect to publicly owned toll-crossing facilities, the motivation in the past has generally been that of freeing the bridges as soon as that objective could be brought about by a reasonable system of tolls. Many bridges that are now free were originally constructed, or purchased from private owners, with the proceeds of revenue bonds that have since been retired from toll collections. Kentucky and Ohio, among others, have provided many bridges in this manner. The federal government has recognized the special character of toll bridges by legislative acts which authorize the use of federal-aid funds in freeing toll bridges on the federal-aid systems, by providing not to exceed 50 percent of the cost; and also the use of federal funds in the construction of toll bridges, provided that they shall become free when the cost to the state or local government shall have been retired (*4*).

Past achievements in this field include, among many other outstanding bridges, the magnificent structures in the San Francisco Bay Area and the bridge and tunnel projects of the Port of New York Authority. Conspicuous among recent accomplishments is the Delaware Memorial Bridge, opened to traffic this last summer. Carrying four lanes of traffic, it has a total length, including approaches, of 10,750 ft., including a 2,150-ft. suspension span. Connecting US 40 and 13 in Delaware with main New Jersey routes, including the New Jersey Turnpike, it completes a direct highway connection between Washington and Baltimore and the New York Metropolitan Area. A $40,000,000 toll-revenue bond issue was sold in June 1948 at a premium of 0.5 percent, with interest at 4 percent and maturity in 1978, although the bonds can be called at a premium in 1953 or any time thereafter. (Fig. 16(a)).

The Tacoma Narrows Bridge (Fig. 17), a four-lane suspension structure opened to traffic in October 1950, replaces its more lively predecessor with a sturdier design incorporating unusual features to allow for wind pressures. The financing was accomplished through the Washington Toll Bridge Authority by the sale of a $14,000,000 revenue-bond issue. In order to surmount difficulties encountered in marketing the bonds, an agreement was made with Pierce County, whereby that county has guaranteed interest payments up to $1,500,000, by issuing its own general-obligation bonds to that amount. Even with this guaranty the $14,000,000 revenue issue sold at only 95 percent of par with nominal interest at 3¾ percent.

Somewhat more favorable financial arrangements were made by the Maryland State Roads Commission in the case of the Chesapeake Bay Bridge (Fig. 18). Toll-revenue bonds were sold at par in 1948 to the amount of $37,500,000, of which $19,000,000 were term bonds, at 3.2 percent, maturing in 1972, and $18,500,000 were serial bonds issued at 2½ to 3 percent. Higher costs encountered in 1949 forced the issue of an additional $6,425,000 in term bonds, also at 3.2 percent.

The security prospects of the Chesapeake Bay Bridge bonds have been greatly enhanced by the decision to pool the revenues of this project with those of two other Maryland toll bridges, the Susquehanna and Potomac River crossings, both now debt-free. In 1949 and 1950, $3,466,000 of excess toll revenues from these two bridges were deposited in the Chesapeake Bay Bridge Construction Fund. The earnings of the Susquehanna and Potomac bridges average more than $2,000,000 a year, which is a substantial share of the average annual debt revenue charge of $2,800,000 on the Chesapeake Bay Bridge Bonds. Thus we have in Maryland the beginnings of a system of toll-bridge financing, wherein a bridge is not made toll-free when its debt is paid but, instead, its continued earnings are used to buttress the security of new enterprises.

Toll Roads

The toll-road movement is the most dramatic development in recent highway history and particularly in credit financing. Others have dealt with the subject at length (*5*).

Although the nation has never been quite devoid of toll roads, the modern toll-road movement may be said to have been begun with the construction of the Pennsylvania

Turnpike in 1937 to 1939. The original turnpike extends from Middlesex to Irwin, providing a route at easy grades through the Alleghenies for traffic between Harrisburg and Pittsburgh. It was opened on October 1, 1940. Work on the eastern, or Philadelphia, extension was begun in September 1948, and it was opened to traffic in October 1950. The western extension was begun in October 1949, and it was opened in December 1951. The Pennsylvania Turnpike Commission now has the authority to construct connecting links north to the New York Thruway and south to the Maryland border and also to construct connections with the New Jersey Turnpike.

The financing of the Pennsylvania Turnpike (Fig. 19) has been rather complex. Aided by millions of dollars' worth of grading and some tunnel-work done by the never-completed South Penn Railroad and by a federal grant of $29,250,000 from the Public Works Administration, the original turnpike was built with a 30-year term-bond issue of $40,800,000, issued at 3.75 percent, with $3,369,000 discount on the sale. An additional $1,500,000 was sold in 1943 at the same interest rate. A refinancing operation in 1946 replaced out-

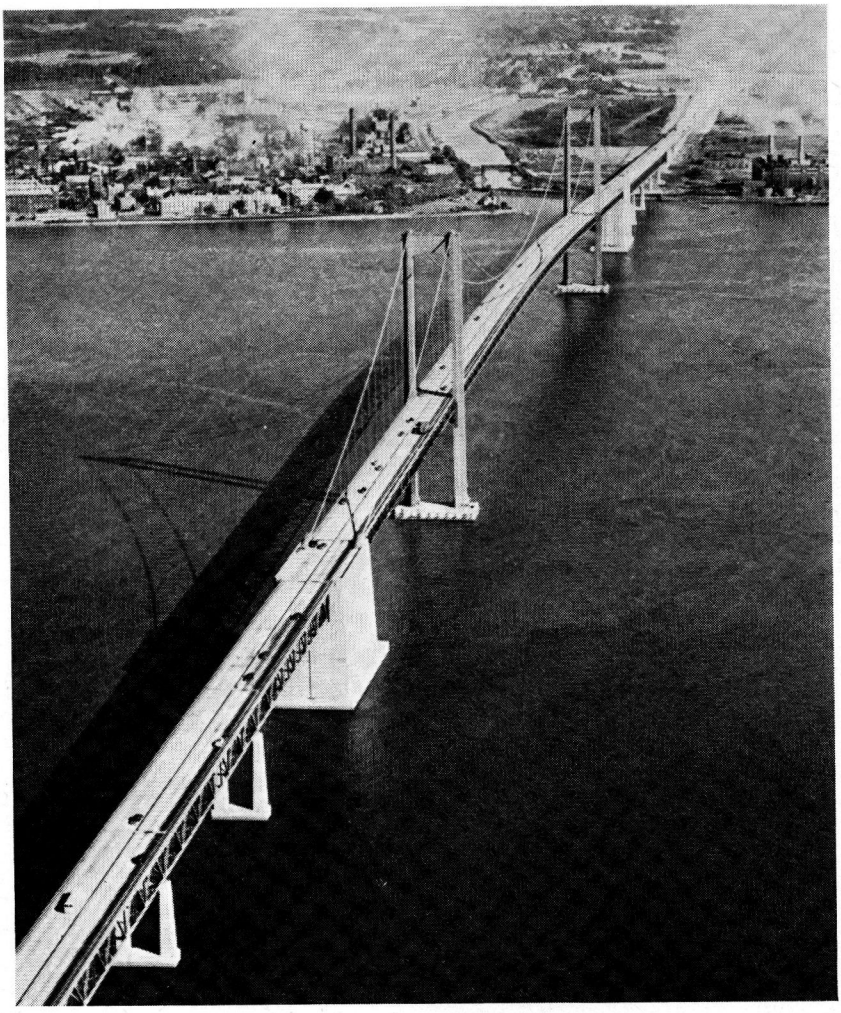

Figure 16A. Delaware: The Delaware Memorial Bridge.

standing issues with $46,000,000 of 30-year bonds at 2.50 percent, sold at a premium of $432,000. These were replaced in 1948 by $87,000,000 were issued in 1948 at 3.25 percent interest and $77,500,000 in 1949 at 2.90 percent, both issues being sold at a discount.

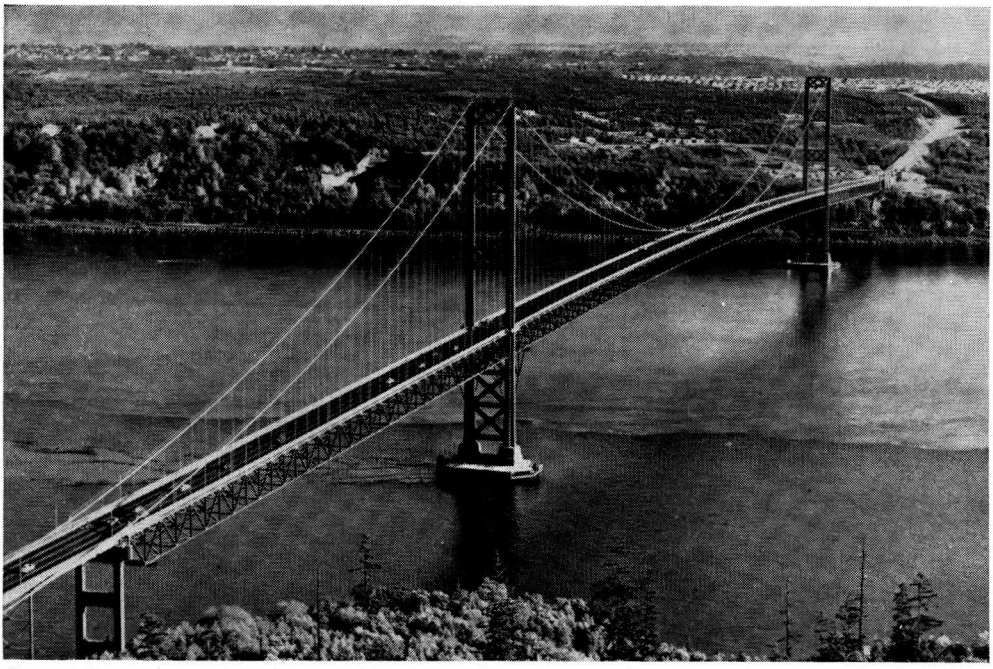

Figure 17. Washington: Tacoma Narrows Toll Bridge.

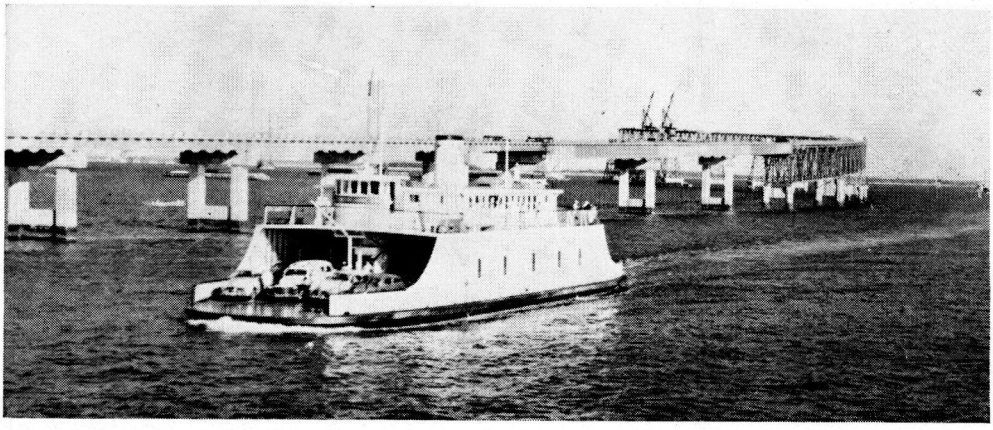

Figure 18. Maryland: Chesapeake Bay Toll Bridge.

$47,000,000 in 20-year term bonds at 2¼ percent, sold at a discount of $1,034,000. The eastern and western extensions have been financed by 40-year term bonds, of which The amount of Pennsylvania Turnpike bonds outstanding at the end of 1951 was about $208,000,000 and the annual interest charge is about $6,000,000. A comparable statement of

earnings will not be available until the western section has been open for at least a year.

A vacationing motorist bound for Northern New England or the Maritime Provinces will take the New Hampshire and Maine Turnpikes in his stride, pausing, of course, at the toll-gates. There are differences, however, not readily perceptible as one rides along. The 47-mile Maine Turnpike (Fig. 20) was financed by ordinary revenue bonds, the original issue in 1948 being $15,000,000 in 30-year term bonds at 2½ percent interest, sold at approximately 95.75 percent of par. Rising costs forced a second issue, in 1947, of $5,000,000 at 2¾ percent; and in 1949 the sale of an additional $600,000 was necessary.

Figure 19. Pennsylvania: Eastern extension of turnpike.

The building of the 15-mi. New Hampshire Turnpike (Fig. 21) was financed by the issue of short-term notes which were taken up by private banks at low rates of interest. In April 1951, the state issued general-obligation bonds for various purposes amounting to $12,600,000, of which $7,000,000 were for the purpose of refunding the toll-road notes. These bonds (due 1952–1976) bear an interest rate of 1.60 percent and were sold at a slight premium (100.107). Thus the net interest rate to the state was 1.588 percent.

The New Jersey Turnpike (Fig. 22) extends for 118 mi. from the new Delaware Memorial (toll) Bridge below Wilmington to the George Washington (toll) Bridge over the Hudson at New York City. The last section between Newark and New York City was opened to traffic in January 1952.

A unique plan of financing was followed by the New Jersey Turnpike Authority. A negotiated agreement was effected with 50 insurance companies and other institutional investors whereby as much as required of the estimated $220,000,000 in construction cost was supplied to the authority on a forward-commitment basis. The authority drew from these committed funds as needed and in turn issued bonds to cover them. This arrangement minimized interest charges during construction and guaranteed the sale of bonds at par. The

Figure 20. Maine: Section of Maine Turnpike.

interest rate on the bonds issued, however, is 3¼ percent. A special fee of 0.5 percent was paid to the investors by the authority. In September 1951 the authority, needing additional funds for completion of the project, asked and obtained from the bondholders approval for the issue of an additional $35,000,000. The new issue was sold at 3.20 percent and at a price of 98.15. Plans are also afoot for connections with the Pennsylvania Turnpike (estimated cost, $12,000,000) and with the New York Thruway (estimated cost, $30,000,000).

It was originally proposed that the New York State Thruway (Fig. 22A) from New York City to Buffalo, with a number of spur connections, be financed, in part at least, by the sale of annual licenses or permits to users. The latest proposals by the Thruway authority's consulting engineers recommended toll booths at 54 of the 94 interchange entrance and exit points, plus five toll barriers at the ends of the closed toll-paying section and 6 barriers on the spur sections (*6*).

The 1950 and 1951 Legislatures acted favorably on a constitutional amendment authorizing the state to issue general-obligation bonds in the amount of $500,000,000 for the construction of the thruway; and in November 1951 the electorate overwhelmingly approved the amendment. Until such time as the bonds are sold the construction expenditures are being met by proceeds of short-term notes and regular state appropriations. It thus appears that the financing of the New York State Thruway will be similar to that of the New Hampshire Turnpike.

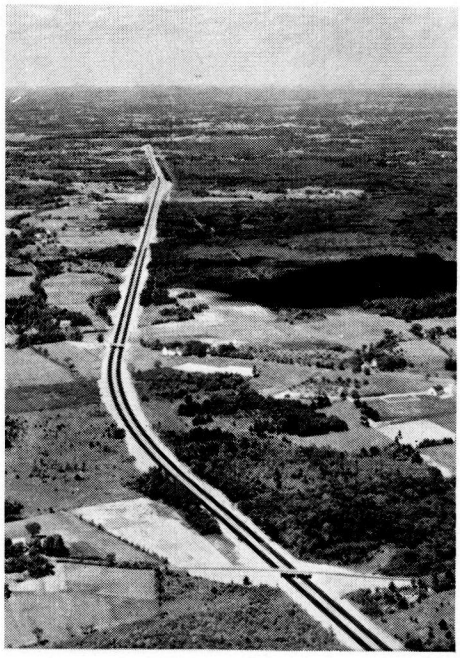

Figure 21. New Hampshire: Aerial view of turnpike.

Figure 22. New Jersey: Construction on turnpike.

In November 1951, according to reports, 13 mi. of the thruway were open to traffic

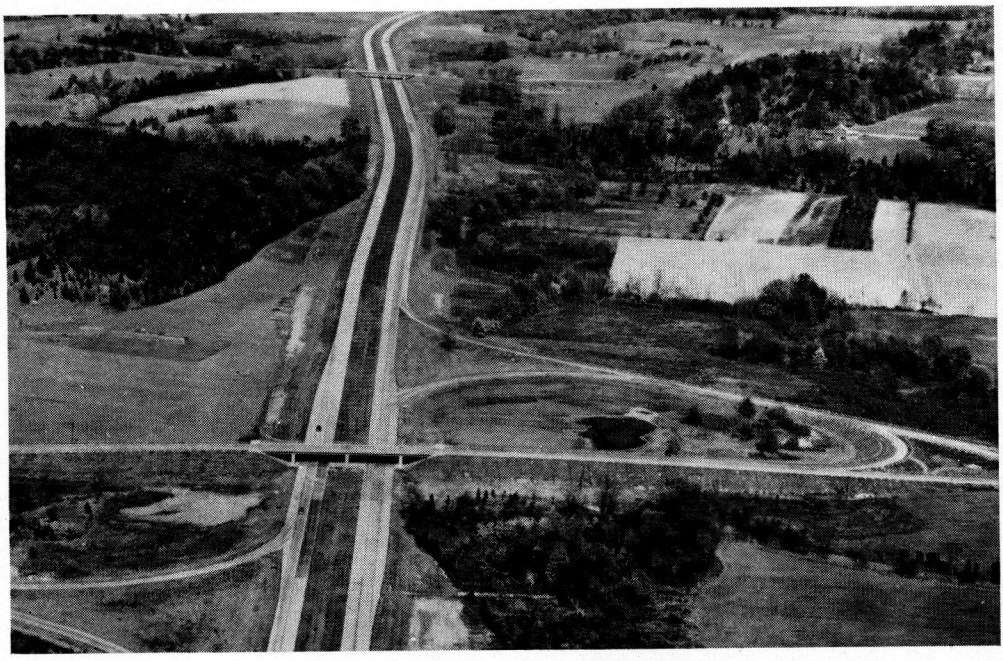

Figure 22A. New York: Thruway near Saugerties.

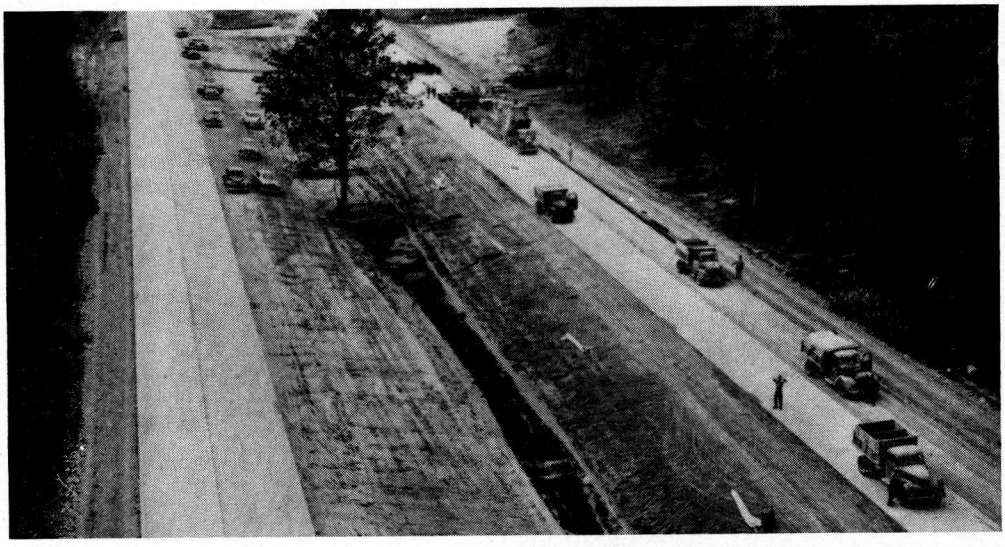

Figure 22B. New York: Section of thruway near Syracuse.

and 70 mi. were under construction. It is anticipated that 140 mi. will be completed by March 31, 1952. The objective is to complete the entire 535-mi. route by 1954.

Among other toll-road enterprises, the 239-mi. Ohio Turnpike project (Fig. 22B), estimated to cost $320,000,000, has not yet reached the financing stage, although plans are near completion, because of a legal tangle in connection with the acquisition of right-of-way. This

difficulty was removed by legislative action in December 1951. The 88-mi. Oklahoma Turnpike connecting Tulsa and Oklahoma City, is estimated to cost $31,000,000; and bonds to that amount were sold at an average interest cost of 3.4 percent. Latest reports indicate that additional financing of at least $5,000,000 would be necessary. The Denver-Boulder toll road in Colorado is being financed from a $6,300,000 toll-revenue bond issue, with interest ranging from 2⅞ to 3 percent. The state, however, has undertaken to guarantee up to 30 percent of the debt service on the bonds. The road was opened to traffic in January 1952. Other toll roads are still in the embryonic stage and need not be discussed here.

Toll-Free Credit Financing

From this point on we are concerned with toll-free bond issues. There is variety and a spirit of experimentation in this field of credit financing, also. Certain states have found it desirable to create special authorities, other than toll authorities, armed with the power to issue bonds. In others certain cooperative arrangements among two or more levels of government have been employed to facilitate the bond-issue financing of urban expressways. Still others have been, or give promise of being, very successful in what may be called the regular bond-issue financing of state highway construction—although even here there is distinction to be found between general-obligation and limited-obligation bonds.

Special State Authorities.—Officials in many states have been hampered in their attempts to make capital improvements by constitutional restrictions on the issuance of bonds. In other states these restrictions have not seriously impeded the credit financing of highways, but the amending processes are time-consuming and results are subject to varying political winds. One of the means of circumventing limitations on state debt is that of creating special authorities or commissions endowed with corporate powers, including that of borrowing money. State toll authorities are examples of this procedure. In Florida and Pennsylvania, however, special authorities have been created whose highway activities are primarily concerned with toll-free highway construction.

The State Highway and Bridge Authority of Pennsylvania was created by act of the General Assembly in 1949. The formidable list of its powers and duties can be summarized by stating that it is empowered to acquire state highways, bridges, or right-of-way from the highway department; to borrow money not to exceed $40,000,000; to construct state-highway facilities, and to rent these facilities to the Department of Highways, the rental being in the form of charges against the motor-license fund, the amount of which will amortize the cost of the project over a 10-year period.

In December 1949, the authority sold $15,000,000 in serial bonds, maturing in 1953 to 1961, at 1.0 to 1.25 percent interest, and at a price of 99.567. In April 1951, $25,000,000 in serial bonds, maturing in 1954 to 1962, were sold at a price of 98.904 and with an effective interest rate of 1.59 percent. The authority's original construction program, later revised, included 22 projects at an estimated cost of $54,000,000, of which $15,000,000 was to be supplied from federal-aid funds and the remainder from the funds of the authority. The authority now has under consideration a construction program which would involve the expenditure of at least $127,000,000 of state and federal funds. The Pottsville bypass, shown in Figure 23, is one of these projects. Others include the $27,000,000 Penn-Lincoln Parkway; the Schuylkill Expressway in Montgomery County, $19,000,000 and the North Bridge in Harrisburg, $7,000,000.

The Florida State Improvement Commission has rather wide powers with respect to public works and unemployment relief, but we are concerned here only with its activities relating to highways. Upon application by any county and approval by the road department, the commission is authorized to construct roads and bridges connecting state highways, and to finance such projects by the issuance of revenue bonds payable from income accruing to the commission under lease-purchase agreements.

Under this procedure, somewhat more than $9,000,000 of bonds were issued in 1947 and 1948 for roads in 14 counties, including an issue of $3,600,000 in Palm Beach County. The State Road Department "rentals" are paid from gasoline-tax funds accruing to the credit of the counties in which the roads are located. Since the roads are toll-free and the source of revenue for debt service is the motor-

fuel tax, the bonds might better be described as limited-obligation bonds.

Of greater consequence is the participation of the Florida State Improvement Commission in the cost of construction of the Jacksonville Expressway by the sale of a $28,000,000 bond issue in September 1950, at a net interest cost of 2.6187 percent. The planned system includes 42 mi. of expressways and arterial connections, two major bridges over the St. Johns River, and several other major structures. The remainder of the then estimated cost of $41,818,000 is to be supplied out of state road department revenues, including federal aid. Debt-service payments will be made from rentals received from the road department under the lease-purchase agreement, these rentals to be derived from tolls collected on the two bridges and from gasoline-tax revenues accruing to the road department for use in Duval County. A $15,000,000 project in Broward County is in prospect; and there is no doubt that the activities of the commission will continue.

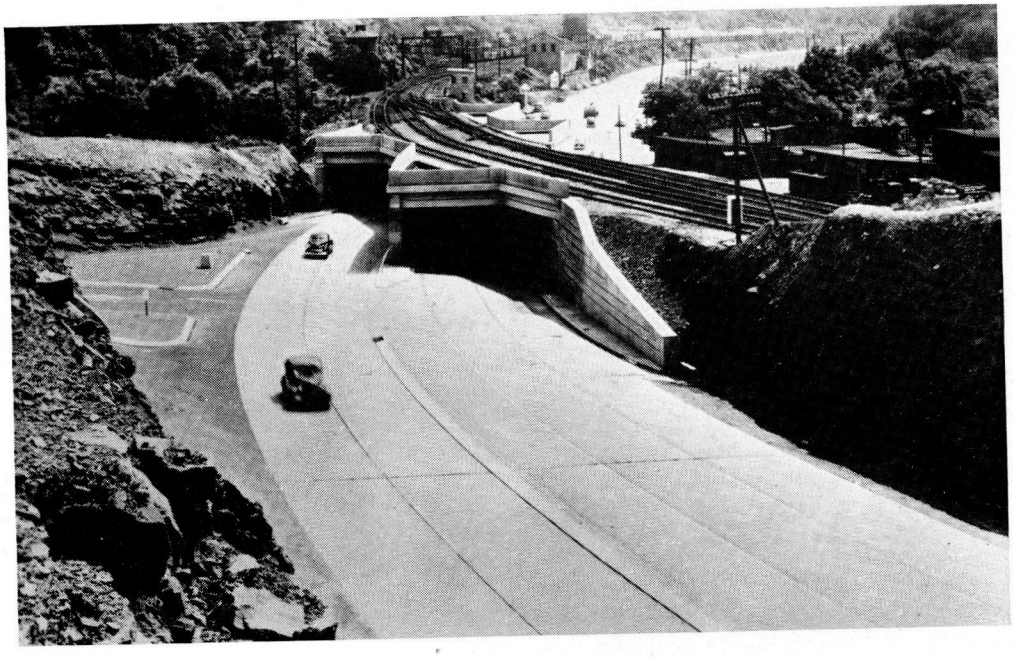

Figure 23. Pennsylvania: Pottsville Bypass.

Cooperative Projects.—In a number of states, without the creation of special state commissions, effective cooperative action on several levels of government, including the federal, has been brought to bear on the problem of financing the construction of urban expressways and controlled-access highways. In this activity, bond-issue financing, generally by the cities or counties, or both, has often played a prominent part. Among these cooperative endeavors may be mentioned the Atlanta Expressway System project, in which bond issues of $12,500,000 by Fulton County and $4,000,000 by the City of Atlanta have been combined with state and federal-aid funds to make up the total current project cost of $28,500,000; the cooperation, with federal and state aid, of Cook County and the City of Chicago in advancing the $446,000,000 city portion of a superhighway plan for the Chicago area, by authorized issues of $70,000,000 by the county and $42,000,000 by the city; and the federal-state-city cooperation in the financing of expressway projects in the Texas cities of Houston, Dallas, Fort Worth, San Antonio, and Austin.

Michigan, one of the states in which bond issues can be authorized only by amending the constitution, has made formal provision, in Act No. 22, 1950, for intergovernmental co-

operation in the financing of limited-access highways. This act authorizes the state highway commissioner, county road commissioners, and cities and villages, either acting alone or in cooperation, to undertake the construction and maintenance of limited-access highways and to borrow and issue negotiable revenue bonds or notes. The bonds, designated as "Limited Access Highway Revenue Bonds", are not to be general-obligation bonds of the issuing governmental units, but are to be payable from the proceeds of highway-user funds received by each of the units from the State of Michigan, and other pledged funds, including federal aid. The total amount of bonds and notes cannot at any time exceed $200,000,000, and the contribution by the state highway commissioner from funds of the state highway department are not to exceed $3,500,000 annually. The bonds issued under this act are not construed to be a pledge of the full faith and credit of the state.

In November 1951, $80,000,000 in Michigan Limited Access Highway Revenue Bonds were issued, the proceeds to be used for the construction of the Edsel Ford (Fig. 24) and the John C. Lodge expressways. The bonds, maturing from 1955 through 1976, were sold at a slight premium ($40,000), the interest cost to the state being approximately 2.1 percent. The state pledged a minimum annual payment of $2,500,000. Wayne County and the City of Detroit pledged a minimum annual payment of $1,250,000 each for debt service.

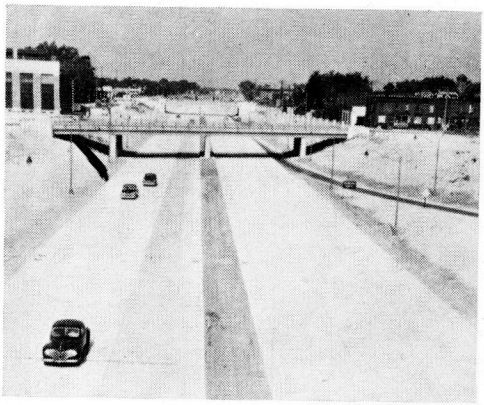

Figure 24. Michigan: Edsel Ford Expressway.

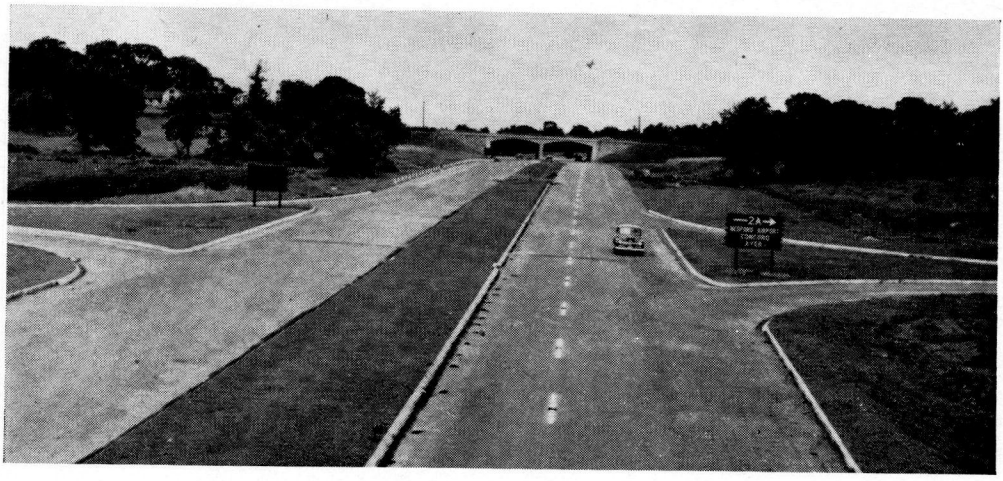

Figure 25. Massachusetts: Route 128 near Lexington.

Regular Credit Financing.—We have reserved for final consideration those states in which there is no special feature other than the issue of state highway bonds in the more or less traditional fashion. Among the states that have recently issued regular state highway bonds are Arkansas, Delaware, Louisiana, Maine, Maryland, Massachusetts, Mississippi, Montana, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Oregon, South Carolina, Vermont, Washington, and West Virginia.

We will start the discussion of Massachusetts with another view of State Route 128 (Fig. 25) to remind us that expressways *can* be toll-free. Highway officials there were confronted with the inability of their highways,

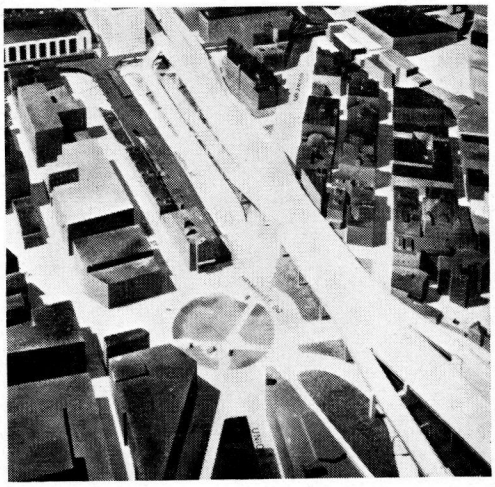

Figure 26. Massachusetts: Model of John J. Fitzgerald Expressway.

Figure 27. Massachusetts: Storrow Memorial Expressway in Boston.

both rural and urban, to cope with the demands of traffic. Studies of highway needs were made, and two reports, one dealing with the Boston Metropolitan Area and one with the remainder of the state, were submitted to the General Court in 1948. The total of indicated needs was $662,000,000. Resultant legislation includes the authorization of a $100,000,000 bond issue in May 1949; another $100,000,000 in July 1950, and a 1951 act increasing the motor-fuel tax from 3 to 4.3 cents per gallon in order to provide for the debt service. The first $60,000,000 of these bonds were sold in November 1950 at an interest rate of 1.25 percent. Successive issues of $20,000,000 in May and November 1951 were sold at 1.50 and 1.75 percent, respectively. Sale of the second $100,000,000 began with a $4,000,000 issue, at 1.75 percent, in November 1951. All of these bonds were sold at slightly above par. They are general-obligation bonds of Massachusets.

Of the highway improvement needs reported in 1948, about half were concentrated in Boston and its surrounding metropolitan area. The legislation authorizing the bond issues provided that $74,000,000 should be expended by the Department of Public Works on projects in the Boston Metropolitan Area and that $16,000,000 should be so spent by the Metropolitan District Commission. Among the important projects on the department's program is the John F. Fitzgerald Expressway, a scale model of which is portrayed in Figure 26. Referred to in its planning stage as the Boston Central Artery, this project is estimated to cost $30,000,000, exclusive of right-of-way.

One of the important projects of the Metropolitan District Commission is the Storrow Memorial Expressway in Boston, a view of which is given in Figure 27.

Equally important and equally costly in total are the needed improvements outside the Boston area. To these purposes the bond-issue legislation dedicated $107,000,000. Among the important rural projects is State Route 138, the Fall River Expressway, shown in Figure 28.

Careful advance planning enabled the Department of Public Works and the Metropolitan District Commission to initiate the bond construction program without delay. As of December 1, 1951, construction costs on department projects under contract or completed were estimated at nearly $88,000,000 with right-of-way of $19,000,000—a total of $107,000,000. The Metropolitan District Commission has proceeded with similar promptness, having spent approximately $5,000,000 of its $16,000,000 allotment at the beginning of

1951. As of July 31, 1951, over $19,000,000 of federal-aid funds had been allotted to the Massachusetts program. The spectacular achievements of the bond-issue program are accompanied by a fairly large construction program financed out of current revenues. In his recent message to the Legislature, Governor Dever requested authorization of an additional $200,000,000 highway-bond issue and creation of a toll-road authority to construct a toll road from Boston to the western border of the state.

The State of Maryland has been similarly active in the bond-issue financing of state highway construction. Although its early high-

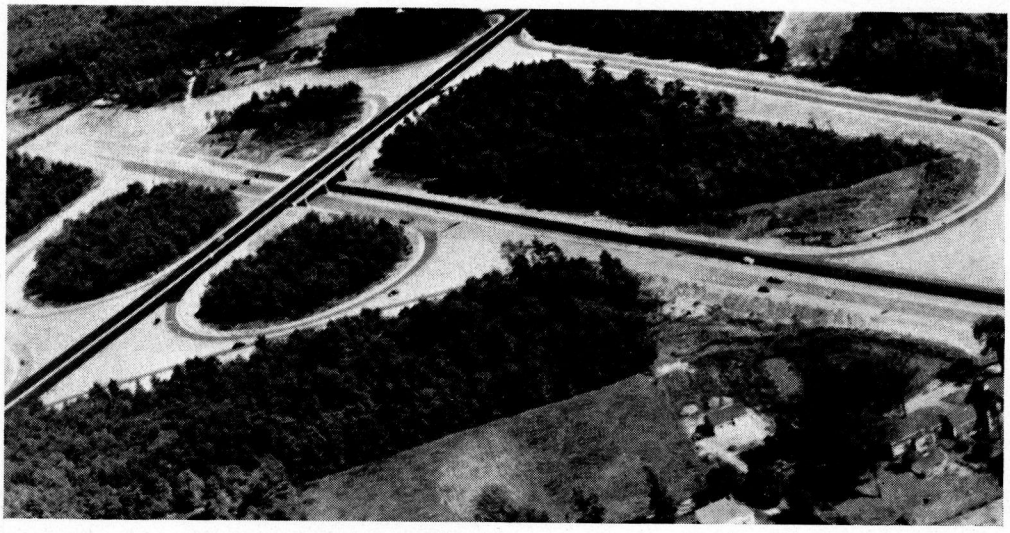

Figure 28. Massachusetts: Route 138—Fall River Expressway.

way-improvement program was financed with general-obligation bonds, Maryland has elected in recent years to issue limited-obligation bonds, secured by the pledge of proceeds of the road-user taxes. Of the 1947 authorization of $100,000,000, bond issues of $25,000,000 each were sold in 1949, 1950, and 1951, respectively. These issues were marketed at above par and at net interest rates of 1.5, 1.45, and 1.73 percent, respectively.

The legislation authorizing the $100,000,000 issue requires that at least 50 percent of the proceeds shall be used for financing, planning and constructing projects on highways having an average daily traffic of 3,000 or more vehicles. Under the authority of this legislation the state roads commission (*7*) has indicated that expressway standards shall be applied to routes having not less than 5,000 vehicles per day and that controlled access in lesser degree shall be applied to improvement projects on routes having not less than 3,000 vehicles per day.

Maryland's share of the Baltimore-Washington Expressway, now nearly complete, gives access to the new airport at Friendship by means of the interchange shown in Figure 29 and will some day connect with a parkway to be completed with federal funds from Washington to Fort Meade.

Among important projects in other parts of Maryland is the relocation of US 50 on the Eastern Shore, shown in Figure 30. Improvement to controlled-access standards of the National Pike, US 40, from Baltimore westward toward Frederick, is one of the major projects on the Maryland program (Fig. 31). From January 1, 1947, to December 31, 1950 the state completed 45 mi. of limited-access highways, 27 mi. of controlled access (lesser control), 44 mi. of ordinary dual or divided highways, and 75 mi. of other primary highways.

North Carolina was one of the early states to surface its primary system with the aid of

bond-issue funds. After assuming control of all rural roads in 1931 the state found that the effort to spread its available road-user funds over a system, primary and secondary, of 65,000 mi., left little or no balance for an improvement program on either the primary state system or the former county roads. In 1949 the voters approved a new bond issue of $200,000,000, to be financed out of the proceeds of an additional 1-cent-per-gallon motor-fuel tax, in order to make possible the hard surfacing of 12,000 mi., and the stabilizing of 35,000 mi. of secondary or rural roads in the state.

By October 1951 the entire issue of $200,000,000 had been sold, at an average interest rate of 1.69 percent. In addition to the pledge of motor-fuel tax revenues, these bonds are secured by the full taxing power of the state. About $149,000,000 had been allocated to definite projects and programs by October 1951; and the total expenditures from the bond fund up to that time were $112,000,000. More than 9,200 mi. of hard surfacing had been placed on secondary roads, and over 11,600 mi. had been stabilized. These figures, which include some current-revenue work as well as bond-issue construction, indicate that the 4-year program of secondary road improvement is progressing very well.

Figure 32 shows the regrading of a secondary road to improve alignment and sight distance prior to paving. Figure 33 illustrates the typical application of a drag-seal finish on a bituminous surface-treated secondary road.

The North Carolina program, as well as a similar one now under way in West Virginia, is something of a challenge to those of us who are inclined to advocate credit financing only for long-lived arterial improvements. The element of risk lies in the possibility that the term of the bond issue would be longer than the life of the investment in secondary roads, since the surfaces placed are of low and intermediate type, and generally of relatively short life. The bonds have been issued serially, to mature over the period 1951 to 1970, with an average term of 10 to 12 years. The average rather than the extreme term is what should be compared with the average life of the in-

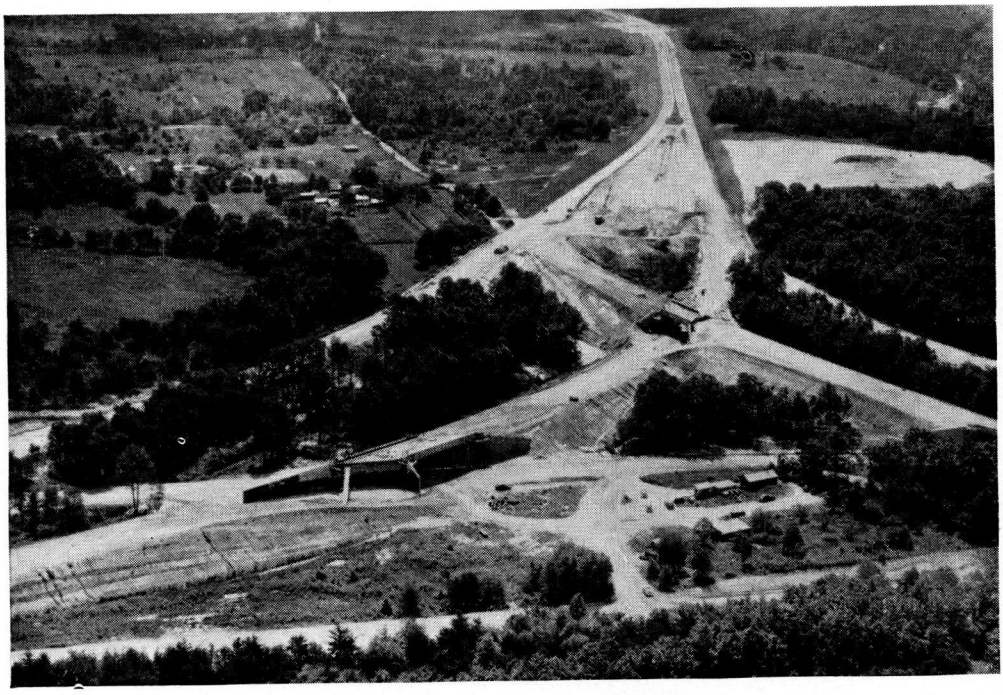

Figure 29. Maryland: Airport Interchange, Baltimore–Washington Expressway.

vestment. A factor of safety lies in the fact that grading is likely to account for a considerable fraction of the total investment. The life of grading is of indefinite duration, provided that the graded roadway is not abandoned, wholly or in part.

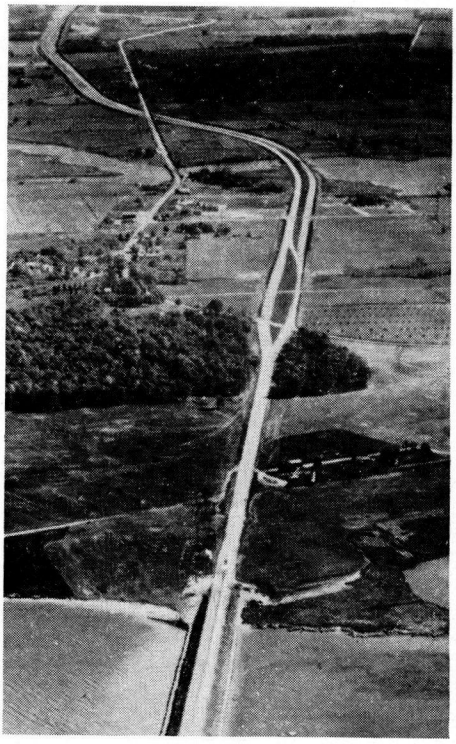

Figure 30. Maryland: Relocation of US 50, eastern shore.

In 1951 the Washington State Legislature broke with that state's tradition of current-revenue financing of highways, by the authorization of a bond-issue program of nearly $67,000,000. Much of the impetus for this legislation came from the report, "Highways in Washington's Future" (*8*), and from the two financial reports prepared by Dr. James C. Nelson (*9*). These reports were used by the Joint Fact-Finding Committee on Highways, Streets, and Bridges in preparing for the 1949 Legislature a series of recommendations, most of which have been adopted, resulting in a large increase in the revenues from road-user taxes.

The bond proceeds are earmarked for specific projects, including $49,000,000 for the reconstruction of US 99, the major north-south artery of the state, from the Interstate Bridge at Vancouver to the British Columbia line; $6,500,000 for the bridge across the Columbia River at Pasco; $4,250,000 for widening Snoqualmie Pass on US 10 to provide additional traffic lanes; $5,000,000 for county roads to serve lands in the Columbia basin; and $1,700,000 for retiring bonds on the Agate Pass Bridge. The plan is to complete the program in four years, nearly doubling the normal dollar volume of contracts in that period.

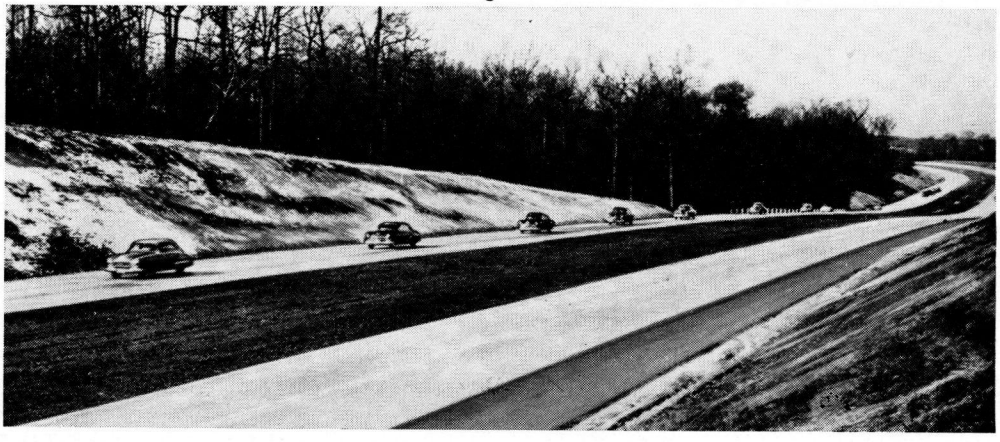

Figure 31. Maryland: US 40—Pine Orchard–West Friendship.

The first $12,000,000 of the authorized bonds known as Series A, Motor-Vehicle Fuel Tax

Revenue Bonds, were sold in August 1951, at a slight premium and a net interest cost to the state of 1.9 percent. They are not general-obligation bonds of the state; but the debt-service charges are a first and prior charge against all motor-fuel tax revenues. As of December 1951 contracts on state highway projects of $5,000,000 had been awarded and procurement of right-of-way was actively in progress.

Figure 32. North Carolina, secondary road.

Figure 33. North Carolina, secondary road.

CONCLUSION

In this paper we have inquired briefly into the principles of public credit as applied to highways. Both logic and experience lead to the conclusion that credit financing is justified as a means of accelerating the improvement of the highway plant and making the benefits of adequate highway transportation available to the public at an earlier date. The most advantageous situation for the use of bond-issue financing is one which requires a short period of abnormally high construction activity, to be followed by a period of relatively low construction expenditures, during which replacement needs accumulate slowly and revenues are available for retirement of the bonds.

A review of credit financing of highways as it has actually been going on during the past few years discloses considerable variety in the methods used in different states, and sometimes in the same state. Toll-revenue financing of major routes in certain states now holds the spotlight. Other states are proceeding to make it clear that toll-free financing of expressways and other major arterials is not a dream but a reality. General-obligation bonds retain their popularity in a number of states, because of the virtual certainty that they will be marketed at the rates most advantageous to the issuing government. Debt limitations and other barriers to general-obligation financing have increased the popularity of limited-obligation bonds, secured only, or chiefly, by the proceeds of road-user taxes. Obligations of this type have been issued in some states as state highway bonds, differing little from general-obligation issues. In other states special state authorities with corporate powers have been created for the purpose. In still others cooperative arrangements have provided for the issue of such securities by counties or cities.

A final thought is suggested by this analysis. Roads and bridges are built as a result of demand. More or less accurate measurements of demand in dollar terms provide the justification, or economic warrant, for highway improvements. The results of such evaluations, confirmed by the experience of toll facilities, indicate that motorists and commercial users are willing to make rather high premium payments for premium service, such as is provided by a limited-access facility, whether toll or toll-free. Under these circumstances there is a natural temptation to think in terms of exploiting the money-making possibilities of traffic demand, rather than to adhere to the austere principles of public service. Wise and faithful stewardship demands that the public, as well as the investor, be given a fair return on its money, whether that money is collected

in taxes or in tolls. Recent efforts to improve the terms of financing toll facilities, either by general-obligation issues or by other means, suggests an increasing awareness of these principles of good government. With continued adherence to high standards of public service, time and experience will resolve the major differences of opinion regarding the best methods of credit financing for highways.

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