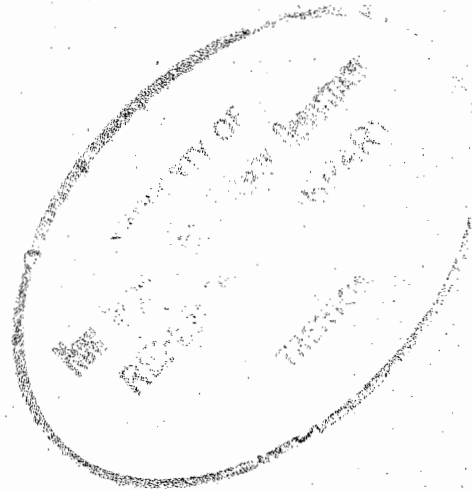


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Highway Finances in New Jersey

DWIGHT R. G. PALMER

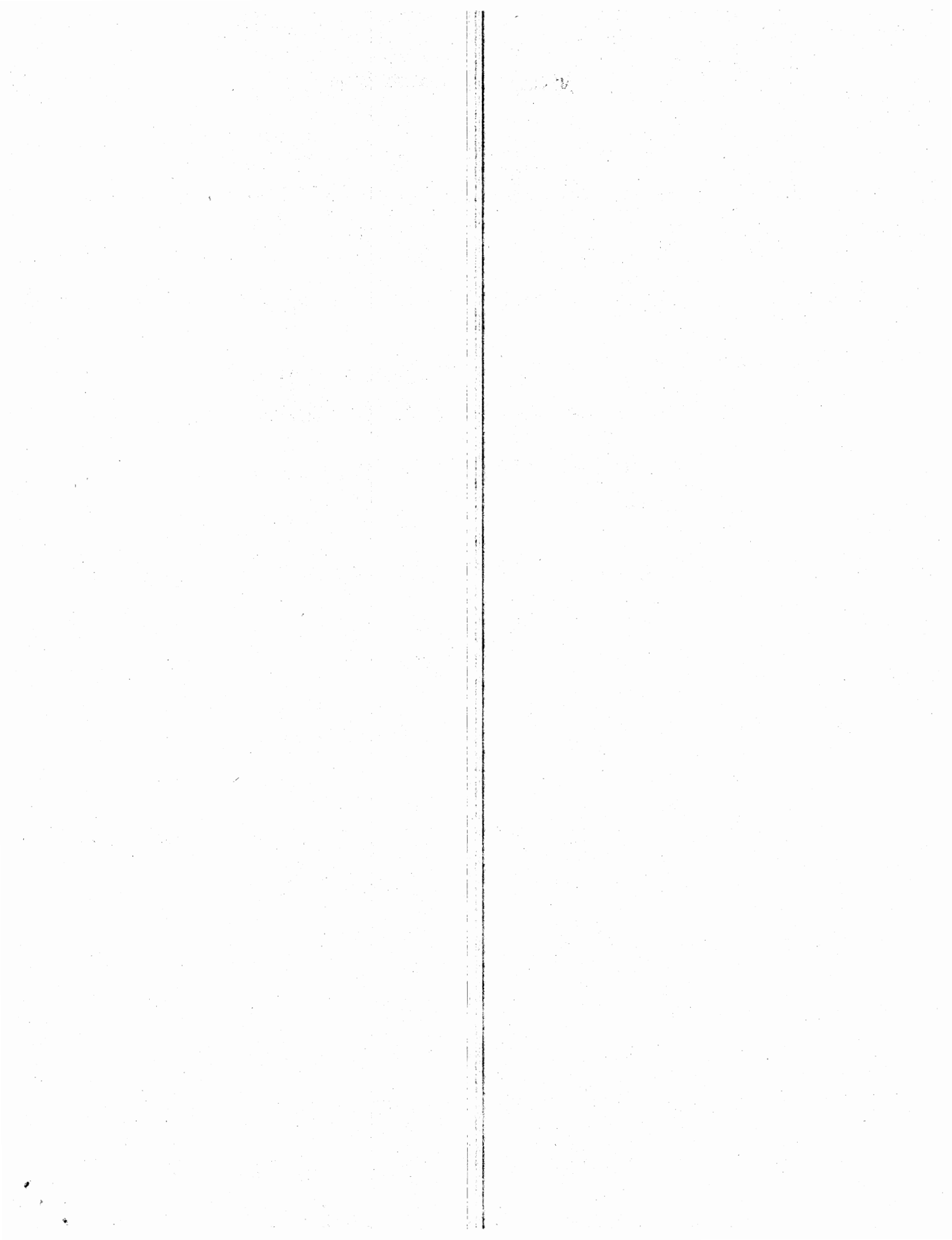


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Highway Finances in New Jersey

DWIGHT R. G. PALMER

Mr. Palmer became Highway Commissioner of the State Highway Department of New Jersey in April 1954 and, in this capacity, also directs the activities of the Division of Railroad Transportation. He served as the Governor's Flood Coordinator for the Delaware River Flood of 1955, and as a member of: the Delaware River Joint Toll Bridge Commission; New York-New Jersey Transportation Agency; Tri-State Transportation Committee; the State Coordinating Council of Traffic and Safety, and of the Governor's Committee on Economy and Efficiency in Government. He is the Governor's Coordinator of the activities of semi-autonomous transportation agencies, including the Port of New York Authority, New Jersey Turnpike Authority, Delaware River Port Authority, Delaware River Bay Authority, Palisades Interstate Parkway and Atlantic City Expressway Authority. He has received an Honorary Doctor of Engineering degree from Newark College of Engineering. Prior to becoming Commissioner, he had extensive experience in various branches of the communications industry. He served on Presidential committees and with private agencies and has been cited by them for his work in promoting better human relations in the nation's efforts in World War II.

NEW JERSEY has the distinction of being the first state to grant state aid in the building of public roads under an 1891 act of the legislature which provided for aid to the counties in the construction of highways to the extent of one-third of their cost. The law appropriated \$75,000 annually, to be expended by the Secretary of Agriculture, with a Department of Public Roads being established in 1894 to administer the program.

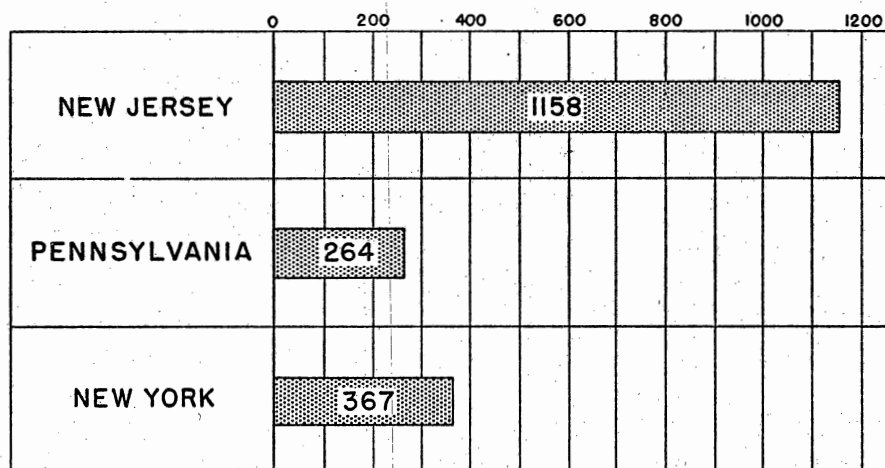
This law was amended in 1912 by increasing to 40 percent the state's share for any county road project approved by the Commissioner of Public Roads. By 1917—when the annual appropriation was increased to \$500,000—2,052 miles of macadam and gravel roads had been constructed.

Several sources have been used in the preparation of this article. They include: U.S. Bureau of Public Roads; Automotive Safety Foundation; *The Review*—Society of Residential Appraisers; *Traffic Quarterly*; *Dun's Review and Modern Industry*; *Bergen Evening Record*; *Newark Evening News*; *Newark Star Ledger*; *Passaic Herald News*; *Wall Street Journal*; New Jersey State Highway Department, Bureau of Planning and Traffic; New Jersey State Highway Department, Division of Right of Way.

To provide a better connection between rural areas and urban population centers, a state highway system, 679 miles, was created in 1917, with a tax of one mill placed on each dollar of ratables to finance its construction. These tax receipts proved insufficient, and the legislature, in 1922, approved a bond issue of \$40,000,000, to be amortized from the mill tax, to expedite its completion in a five-year period. Only those routes then in existence, 728 miles, were eligible for improvement.

To meet increasing traffic demands, the 1927 legislature designated a system of 1,871 miles to be financed from a gasoline tax of

REGISTRATIONS PER MILE OF PRIMARY HIGHWAYS NEW JERSEY-PENNSYLVANIA-NEW YORK



two cents, receipts from motor vehicle fees, and a bond issue of \$30,000,000, also to be amortized from the mill tax.

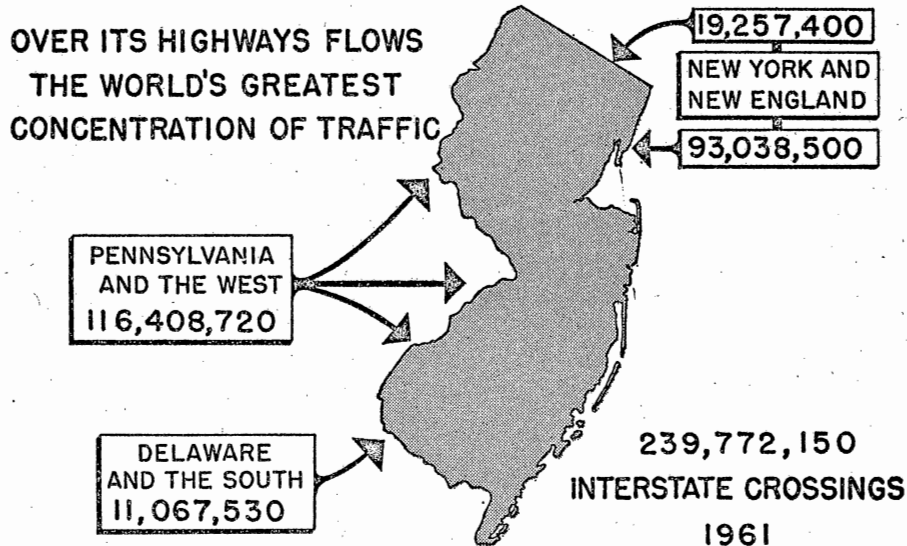
The system was revised in 1929, and in the following year additional funds were provided for its construction by an increase in the gasoline tax to three cents, and an additional bond issue of \$65,000,000 for bridges, viaducts, tunnels and rights of way.

At the same time, \$18,000,000 was authorized for the elimination of railroad grade crossings not on state highways, \$10,000,000 for state institutional building and \$7,000,000 for the Water Policy

Commission, a total of \$100,000,000—the sinking fund and interest requirements to be met from the gas tax. An annual return of \$5,000,000 to the municipalities, as an offset to the mill tax, was also provided. This provision, however, was repealed in 1933, together with the mill tax, and the amortization charges of the two former bond issues, amounting to \$70,000,000, were placed against the gas tax.

The inclusion of \$17,000,000 for institutional buildings and the Water Policy Commission, in bond issues, charges for which would

NEW JERSEY IS A CORRIDOR STATE



have normally come from property taxes or other revenues, marked the first material diversion of motor vehicle funds for other than highway purposes.

By the passage in 1933 of a Budget Act for the control of funds passing through the highway department, the legislature also provided mandatory appropriations to the counties for road and bridge construction, reconstruction and maintenance, debt requirements and lighting, in the amount of \$6,735,000, of which \$6,000,000 was distributed on the basis of county road mileage, area and popula-

tion. These sums have since been increased to \$9,155,000, of which \$6,000,000 was distributed as before and \$2,000,000 on the basis of county road mileage and population and \$1,155,000, or \$55,000 per county, as a direct grant.

To assist the townships and boroughs in the improvement of their huge rural-road mileage, the Herrick Act was adopted in 1916, providing for the expenditure of \$5,000 in the various townships of each county, or \$105,000 for the state. This has been gradually increased, the total provided for 1957, for example, being \$6,768,700.

ON NEW JERSEY HIGHWAYS 1 OUT OF 5 VEHICLES IS A TRUCK



AT SOME LOCATIONS THE RATIO IS 1 OUT OF 2



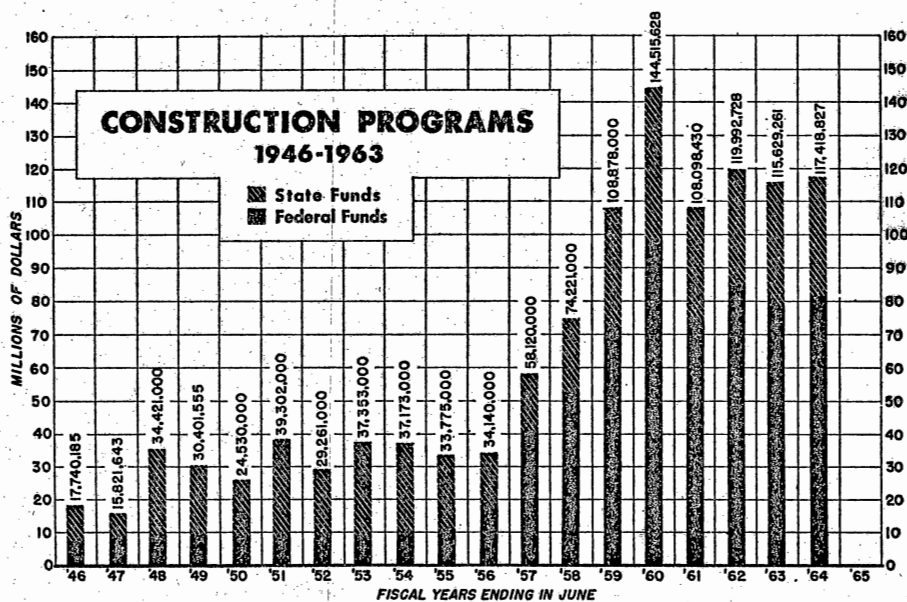
In addition, \$340,000 is appropriated each year as aid to counties and municipalities for highway lighting.

Following the construction renaissance of the 1920s and 1930s, road building in New Jersey came to a virtual halt with America's entry into World War II. Not until 1946 and 1947 did construction resume with token programs of \$16.8 million of combined state and federal funds. In fact, construction programs averaged less than \$40 million a year until the year 1956.

This paucity of funds found New Jersey unprepared for the post-war traffic onslaught. Not only did registrations increase one million between 1946 and 1956, but travel patterns changed materially. The exodus to the suburbs and beyond created new transportation problems. As a result, traffic congestion, heretofore largely confined

to cities, became a suburban, and even a rural problem. Many highways were overburdened with traffic volumes of twice their design capacity.

As a first step in attacking New Jersey's highway problem the department developed a Master Plan for construction. This plan



was based upon current and future needs as indicated by population, registration and travel projections to the year 1975.

When completed in 1956 the plan was taken into each of the twenty-one counties by the commissioner and members of his staff and reviewed with county and municipal officials—a distinct departure from prior department policy. The final plan reflects many constructive suggestions received during this statewide tour.

The heart of the master plan is a statewide network of 821 miles of new freeways. The interstate system part will comprise 376 miles. Also planned is the dualizing or widening of more than half of the existing 1,862 miles of the state highway system.

Fundamentally, any highway department's construction program in the main depends on the "magic ingredient"—money. In

New Jersey, unlike most other states, the highway department has been dependent solely upon inadequate allotments as expressed in the annual legislative appropriations bills. Such "hand-to-mouth" financing has not only prevented the department from constructing badly-needed highway facilities, but has also severely hampered its long-range planning program.

After the department suffered some penalties of reduced federal assistance, the legislature, persuaded by the department's logic, increased the annual highway construction budget to an amount sufficient to match federal aid and also provide some funds for construction of projects not eligible for federal assistance.

Though allotments through 1963 were sufficient to assure completion of the system of interstate routes on schedule, to improve the safety and capacity of major existing highways and to construct some sections of entirely new primary and urban routes, they were far below the amount needed for completion of the master plan.

HIGHWAY NEEDS: THE REASON AND THE ANSWER

It has been said so often that New Jersey is an urban, densely populated corridor state, with traffic volumes high above the national average, that every citizen should be aware of this fact by now. A trip around the state highway system will present the fact far more eloquently than words. The statistics are frightening—travel on our 1,900-mile state highway system averaged 12,425 vehicles per mile in 1961.

The demand for travel lanes continues to increase. Provision for new interstate crossings, such as the Delair Bridge, the Chester-Bridgeport Bridge, the second span for the Delaware Memorial Bridge, the Cape May-Lewes Ferry, the Narrows Bridge, and the improvement of existing crossings, all add to the load.

To meet this onslaught, planning is needed. The federal government provides highway funds for research and planning, amounting to 1.5 percent of the annual federal aid allotments, and the highway department is using the money in such cooperative programs as the Penn-Jersey Study, the 10-County Northeast Study, the work of the Tri-State Transportation Committee and certain research projects. Such procedures are imperative as, after 1965, all federal aid highway projects must be based on comprehensive transportation plans.

The New Jersey State Highway Department is no stranger to planning—quite the contrary. Comprehensive blueprints for meeting the state's transportation needs have been in its files for more than forty years and have been used in drafting annual construction programs. These long-range programs have been periodically revised. The department is fully aware, just as much as the motorists who complain of congestion, hazard and delay, of what needs to be done.

But planning is not enough. No blueprint is more than an intriguing scrap of paper without the wherewithal to breathe life into it.

The answer to this problem is no secret to any of us. What we need is funds.

HIGHWAY NEEDS: THE DOLLAR SIGN

The New Jersey State Highway Department has long been plagued with the yawning gulf between the state's highway needs and the limited resources to meet these needs.

A state study prepared at the direction of the U.S. Congress in 1955 indicated the deficiency as more than \$3,155,000,000. The figure arrived at was to put the state highway system in a position to handle the estimated 1965 traffic demand.

This study, revised in 1958, was labeled the department's "Master Plan"—a listing of the improvements required to handle estimated 1975 traffic demand.

Despite the progress made during the intervening three years, the total estimated deficiency stood at \$2,940,000,000.

A review of the master plan shows that the department has made a sizeable dent in that long list of needed projects. But the most recent estimate of the cost of work remaining to be accomplished by the target date of 1975 indicates it still amounts to \$2,007,000,000.

The bulk of the accomplishments to date can be credited to the construction programs of the past five years, which have averaged between \$115 million and \$120 million a year. Some of the reduction in the total cost is due to sizeable savings in the cost of New Jersey's interstate system between the 1958 and 1960 cost estimates required by the Congress. For example, a costly new bridge across the Hudson was eliminated.

Regardless of this, the present level of construction funds available to the department will leave it short by substantially more than \$1 billion in 1975.

The needs of our state highway system, as presently discerned, may be broken down as follows:

Completion of the Interstate System.	\$ 600 million
Needed Non-Interstate Freeways	814 million
Other Federal Aid Projects covering almost every existing land-service highway, in every county of the state	513 million
Projects which are not eligible for Federal Aid	75 million
	Total \$2,002 million

What resources do we have to meet this need? The highway department contemplates a \$117.4 million construction program for 1963-64, to be financed from normal tax revenues and the federal aid apportioned for that fiscal year. The proposed bond issue would provide \$300 million for construction during a five-year period.¹ It is assumed it would finance work from July 1, 1964 through June 30, 1969. Estimated federal aid to become available during this period amounts to approximately \$576 million.

RESOURCES

Thus, the total amount available for expenditure through the end of the bond issue amounts to slightly more than \$994 million. This would leave the department needing to spend (according to present estimates) about \$1,013,000,000—in order to fulfill the master plan— but there would still be time to accomplish the task.

In short, there is no inexpensive way to provide for our future needs, and the longer we wait the more difficult and costly it becomes to catch up.

Any improvement upon the face of the land produces benefits for the citizens who reside in that area and for those who travel through it. This is particularly true of highway improvements, for they not only facilitate the movement of people and goods, but they open up new territories for residential and industrial development. Most people understand these principles and there is no argument

1. Approximately \$50 million would be required for construction operating costs.

as to the need for better highway transportation. The only question is: When will we be able to provide these benefits for the people of New Jersey? The answer: When we have adequate funds, and no sooner.

IS BOND-FINANCING WORTH THE COST?

Should the state highway department share in the proposed \$750,000,000 bond issue, it would receive a net of \$30,000,000 a year more than it now receives through direct appropriations for a period of five years, or a total increase of \$150,000,000 over the next five-year period for use in improving the state highway system. In addition, a net amount of \$12,000,000 a year for five years would be provided for state aid to county roads, for a total of \$60,000,000 during the active life of the bond issue.

Costs vs. Benefits. There is no dispute that there is a cost involved in bond financing. Who ever decried the fact that all businesses and industry borrow their working capital and pay interest or dividends on these borrowings until retirement? The same applies to the federal government. Here, as in all cases, the cost of neglect or postponement must be weighed in the balance against the benefits to be realized by accelerating such a program.

Cost-Benefit Ratio. Looking at it another way, the cost of a bond-issue financing method must be weighed against the cost of delaying the benefits which our citizens will realize from the earlier financing and construction of the new transportation facilities. Our country's state highway departments and the Federal Bureau of Public Roads have a standard formula that measures the benefits realized by the users of new highways. This is called the "cost-benefit ratio" method of analyzing these values.

Every facet of a proposed new highway is analyzed and compared with existing methods of transportation. Every angle—savings in time, greater safety, greater convenience, and all other aspects of traffic service—is taken into account.

Unit values, more or less standard throughout the nation, are assigned, and it is the regular order of business to come up with a very detailed picture of the benefits any new or improved highway produces and equate them in dollars to the cost of the facility.

In New Jersey, the financial problems of our highway depart-

ment center mainly around the need for funds to construct freeways completely within the state which must be financed either on a 50-50 matching basis or entirely by the state government. We have a great need for this kind of highway facility and it is precisely this kind of road which provides the greatest benefits. It is conservative to estimate that the users of these new freeways will realize six dollars in benefits for every dollar invested in the new roads over the life of the pavement. Incidentally, a figure of thirty years is used for pavement life—the same as the life of a normal bond issue.

Right of Way. These are savings for the users of highways. We must not neglect the savings to the state government, which can be provided by accelerating our construction program. For example, the cost of right of way in a state as urban as New Jersey and facing a continuing population explosion, is constantly increasing. It is a known fact that in very many areas of our state the cost of land which could be acquired now for highways, if sufficient funds were available, will be multiplied many times if the acquisition is deferred.

Here again, it is conservative to estimate that the highway department can realize a saving to the taxpayer of five dollars for every dollar invested in such advance purchase of right of way and this saving perhaps in a decade!

Interest Costs. As mentioned previously, the proposed bond issue would provide a net of \$150 million for the highway department in excess of the amounts now received from normal revenues. These amounts, averaging approximately \$40 million a year in recent years, would also be substituted for by bond-issue funds in order to provide an increase in state aid to education. In other words, of the total \$750 million bond issue, \$350 million would be allotted to state highway construction. Of this \$350 million, \$200 million represents a replacement of current revenues in order to continue our present level of construction and \$150 million represents an acceleration of these programs.

In estimating the benefits to be derived through the construction of new freeways and the advance purchase of right of way which would be possible under this acceleration of our present rate of progress, only the proposed increase of \$150 million has been taken into account and weighed against the financing cost of the bond issue. These benefits will be summarized later in this report, but it

is significant to note that they alone would produce gains sufficient to counterbalance the estimated interest cost not only of the \$150 million, but also of the entire bond issue!

And throughout this discussion of interest costs, we must not forget the interest available to the state, through investment, on the savings which would otherwise be spent.

General Benefits. There are a number of other very important economic aspects to highway construction which cannot be estimated in detail. Highways produce substantial benefits for the people who live along them as well as for the people who travel on them. Land values in accessible areas increase, new industry is attracted, with a resulting favorable effect upon local tax rates. The economic vitality of entire regions is stimulated and these benefits, in the long run, may outweigh all other considerations.

In summary, it can be stated that the savings which will be realized by accelerating our highway construction program more than balance the cost of financing this acceleration through a bond issue and, again looking at it from the other angle, the cost of delaying needed highway construction far outweighs the cost of paying interest on bonds.

TIME IS MONEY IN THE FACE OF RISING COSTS

A recent article in *The Wall Street Journal* noted that highway costs are rising and that the trend seems certain to continue. Indicating that highways will cost more the longer we wait to build them, *The Wall Street Journal* said:

Highway construction costs are on the upgrade again after moving downhill much of the time since 1957. Of 21 state highway departments surveyed by *The Wall Street Journal*, more than half believe costs will continue to climb in 1963. Some think the rate will accelerate.

This trend is fairly recent. An index of bid prices on Federally aided highway construction compiled by the U.S. Bureau of Public Roads hit its peak, at 103.1 percent of the 1957-59 average, in 1957; from then through 1960 it fell 8.7 percent. The index turned around again in 1961, but the cost rise that year was less than 1 percent.

Big 1962 Rises. Last year, however, the index jumped 3.9 percent to 98.6 percent of the base-period average. It's possible these figures understate the actual rise, too. New York, the biggest highway builder in terms

of dollar volume, recorded a 13 percent jump in road construction costs last year. Illinois had an 11.4 percent rise, California 7.1 percent.

One reason for this situation is that the Federal index doesn't include costs of acquiring rights-of-way for highways. Rising land prices have sent these up sharply in many states.

Wages and Inspections. Highway officials and road builders mention several other reasons for the climb in construction costs, including wage increases for road workers and higher prices for new roadbuilding machinery, which are reflected in contractors' bids. Ironically, they say, efforts by Federal and state authorities to get the most out of highway funds by tightening inspection to eliminate substandard work and contractor cheating also are raising costs for the contractors, and thereby for the governmental bodies building roads.

Average wholesale prices of new construction equipment such as bulldozers, graders and pavers have risen about 7.7 percent in the last four years, Government figures show.

Inspection Crackdown. Finally, in the wake of Congressional investigations which uncovered highway building scandals in several states, both Federal and state highway officials are tightening controls on highway construction.

The Bureau of Public Roads in the current fiscal year is adding 127 engineers, appraisers and auditors to its staff, a 13 percent increase in these categories. Their tasks range from boring holes in new pavement as a test of construction to poring over state claims for reimbursement under Federal matching-aid plans. Many states are taking similar steps: North Dakota has added 100 workers to its highway commission staff of 1,200 in the past two years.

ADVANCE PURCHASE OF RIGHT OF WAY

John A. Volpe, former Federal Highway Administrator, said, six years ago:

A mountain of evidence proclaims the benefits of advanced acquisition. It greatly facilitates the orderly planning of a comprehensive system of arterial highways. It makes possible large monetary savings in the costs of future rights-of-way. *These savings can range from five to thirty dollars for every dollar invested today for future highway right-of-way.* Advance acquisition reduces the economic waste which occurs when rights-of-way are bought after public or private improvements have been completed in a particular area and it will hold to a minimum the number of persons and families who may be inconvenienced or displaced by a future highway improvement. Contractors and roadbuilders have a special stake in this phase of the new

program. Long delays in acquiring and clearing right-of-way are often very costly to builders. . . .

A. C. Clark, former Assistant Commissioner, Bureau of Public Roads, noted:

The cost of the right-of-way acquired for the construction of the Baltimore-Washington Parkway ranged from \$250 to \$350 an acre. Recent sales of large tracts along the right-of-way show that land values in rural areas along this highway have risen to as much as \$3,500 per acre. Closer to Washington, land along the Parkway is selling by the square foot.

Similar increases in land value have taken place along controlled access highways all over the country. They will take place along the new Interstate system, particularly around the interchange areas. Sites, readily accessible to these safe, efficient highway transportation arteries, will be in great demand for new industries, housing developments, shopping and service centers and other businesses.

This anticipated rise in land values along the Interstate system brings us to another provision of the Federal-Aid Highway Act of 1956 which has a historical background. In the past, failure to obtain right-of-way well in advance of scheduled starting dates for highway construction projects frequently led to difficulties. For one thing, land values would have already started increasing. Construction often has been delayed by right-of-way litigation or until utilities could be moved. To avoid such difficulties in the new program, Congress in the Federal-Aid Highway Act of 1956 provided that States can be reimbursed later for right-of-way acquired as much as five years in advance of the construction of any Federal-aid highway project.

This provision, if fully utilized, will not only save tax dollars in right-of-way costs but will materially facilitate highway contractors' operations. The Act further provides that any State which is unable to obtain the necessary right-of-way for any section of the Interstate system or cannot obtain it with sufficient promptness may request the Secretary of Commerce to acquire the land. The Secretary is authorized to comply with such requests. . . .

Dun's Review and Modern Industry stated:

Land values along the routes being selected for the new highways are spurting upward. Commercial use of land immediately adjacent to the roads will be prohibited, but there is brisk demand for the land farther back. Some industries are planning locations near the new arteries. States and counties are planning feeder roads to access points on the new thru-ways. Full impact of the program, however, will not be felt until later.

The initial cost of freeways is high, but, in the long run, they are the least expensive portions of our road and street plan. Due to the high volume of traffic they carry, costs per vehicle mile are low.

DO FREEWAYS PAY FOR THEMSELVES?

The initial cost of urban freeway construction and right of way looms large by comparison with expenditures for conventional roads and streets. Sections of some freeways, where terrain features have been formidable or where highly developed property had to be acquired, have cost as much as \$35 million per mile. A cost of \$5 million per mile, however, has not been unusual.

When these expenditures are compared with benefits, such as reduced vehicle operating costs, savings of commercial vehicle time, and reduced accident costs, freeways prove much less expensive per vehicle mile than other roads or streets. Most freeways pay for themselves within a relatively few years.

Three different methods have been developed to measure the direct dollar benefits from freeways. Two of these involve the money savings to motorists; one measured on a cost-per-mile formula and the other on a cost-per-minute. The third method measures the dollar value of a freeway by the public revenue its traffic generates through user-taxes.

The average saving from freeway use came to two cents per vehicle mile, computed roughly as follows:

Gasoline savings	0.33 cents
Vehicle-maintenance cost savings due to elimination of stop-and-go travel	0.24 cents
Accident savings	0.56 cents
Commercial-vehicle time savings pro-rated to all traffic	0.87 cents
	Total 2.00 cents

What do these figures mean in relation to the investment in freeways? The first 46.3 miles of freeway in Los Angeles cost \$197,507,000. In 1954 this system carried 1.2 billion miles of vehicle travel. At two cents per vehicle mile, this meant that motorists saved \$24 million a year, or enough to cover construction costs in slightly more than eight years.

The Cabrillo Freeway in San Diego cost \$4 million, and it was

found that at the two-cents-per-vehicle-mile rate, savings to users would balance costs in less than four years.

Transportation economists generally agree that this formula, which assigns no value to the time of private vehicles, is a conservative one. Applied to existing traffic volumes, it shows that savings to users would equalize freeway costs in Detroit in 20 years, in Atlanta in 8.3 years, in Cleveland in 10.8 years and in Pittsburgh in 15.3. More difficult and costly construction in some cities, as well as differing traffic volumes, accounts for the variations.

Time savings to passenger-occupied vehicles cannot be overlooked. The salesman or the contractor making his rounds, the doctor or the repairman on call, the legislator or businessman keeping an appointment, all can attach money value to the time even though their vehicles are not classed as commercial. That millions of persons pay a premium to use toll roads and save time shows the value they put on minutes and hours. Many traffic checks show that drivers generally choose the route that is shorter in time even though it may be longer in miles.

When a computed value is placed on the time of passenger car drivers, the savings per mile on the freeways studied come to 4.16 cents. By this measure of savings the freeways mentioned above would pay for themselves in one-half the time noted.

This third method of figuring the dollar value of freeways, by the user revenues their traffic contributes to the public treasury, likewise shows them to be prudent investments.

Over and above the direct dollar savings to users there are many other benefits from freeways which are capable of measurement, such as faster service for transit riders, increased property values, industrial and residential growth and urban redevelopment—all discussed in other sections of this report.

A study of the freeway from Perth Amboy to U.S. Route 22 near Somerville (Route I-287 and Outerbridge Connector) indicated an initial cost of approximately \$60 million for 18.5 miles and maintenance of approximately \$2,000 a year per mile.

It was estimated that it would take approximately seven years to complete the entire 18.5 miles, at the end of which the sections already opened would have earned \$27 million in benefits. However, the benefit curve continues to rise sharply for the next 20

years, while the cost curve flattens sharply. The two will balance each other exactly three and one-half years after construction is completed. After that, the accumulated benefits are all on the "plus" side, reaching an estimated \$200 million in excess of the cost by the time the route reaches capacity 16 years later.

This study developed a benefit-cost ratio of 11.7, or \$11.70 for every \$1.00 invested on the basis of average benefits of \$13,470,000 a year for 30 years divided by average costs of \$1,159,000 a year for 30 years.

A similar study of I-80 for 16.2 miles from the George Washington Bridge to Route 23 indicated an initial cost of \$129 million during an eight-year construction period. At the end of this time, the cost exceeds the benefits by approximately \$68 million; however, the two factors balance out six and one-half years later. By the time the route reaches capacity, about 19 years after construction is completed, the benefits exceed the cost by almost \$165 million.

This study developed a benefit-cost ratio of 7.7, or \$7.70 for every \$1.00 invested on the basis of average benefits of \$14,954,000 a year for 30 years divided by average costs of \$1,952,000 a year for 30 years.

It has been reported in the press that the over-all interest cost on the entire \$750 million bond issue would approximate \$500 million. While the validity of this figure would certainly have to wait upon the actual bond sales themselves, which would be accomplished at the most opportune time and in the most economical manner possible, it can still be used for talking purposes. On that basis, therefore, the prorated interest cost of the \$150 million acceleration of highway construction would amount to approximately \$100 million.

Portion of Bond Issue Applicable to Accelerated Highway Construction	\$150 million
Pro-rated Interest Cost (approximate)	100 million
Total Principal and Interest Charges	250 million
\$100 million devoted to Freeway Construction produces benefits of	
\$600 million in 30 years	600 million
\$50 million devoted to advance purchase of Right of Way produces	
savings of \$250 million	250 million
Total Benefits to Highway Users and Taxpayers	850 million
Net Gain over Cost	600 million

This gain may seem incredible, but it is the natural result of the benefits produced by adequate transportation facilities. The only question of real importance is: When will these benefits be realized by the people of New Jersey? In the face of present revenue restrictions, a bond issue is a normal and accepted method of accelerating highway construction.

GENERAL FREEWAY BENEFITS

Here are a few of the experiences reported from areas where freeways have been completed:

1. Residential developments are springing up like mushrooms near the new routes, with the promise of quick and easy access to downtown offices and plants.

2. The resale value of homes abutting the expressways remains constant or falls off only slightly (not drastically, contrary to first impressions) while real estate values in areas 100 to 400 feet away rise faster than property values out of the highway's immediate "zone of influence."

3. Retail trade in a small community which has been by-passed by an interstate route may slump temporarily, but it soon climbs back to its normal pace, and even accelerates.

4. New industry is moving into areas served by the highways, much as industrial expansion, one hundred years ago, followed the railroads, creating more jobs for local citizens and producing more tax revenue for local governments.

5. The value of adjacent farm land rises, sometimes adding thousands of dollars to the value of the "old homestead."

These are findings being reported to the U.S. Bureau of Public Roads with completion of a number of independent studies by universities, state highway departments and professional research organizations. All together, they constitute a striking justification for highway improvements only vaguely realized a few years ago.

The engineers, economists, businessmen and legislators are discovering that new roads boost land values significantly. As mentioned above, the market value of land adjacent to a new expressway may decline slightly, but beyond this narrow fringe, it may skyrocket. The value of land along the Grand Central Parkway on Long Island, for example, has increased four times faster than land

in the entire balance of the area it serves since the road was completed.

A wave of suburban development, with its construction of badly needed new homes, frequently follows the extension of major commuter routes. A new expressway close by is a major factor in choosing a home these days. Realtors report that one of the first questions a prospective home purchaser asks is: "How long will it take me to commute to my job?"

Completion of a new highway in a metropolitan area is followed not only by a burst of residential development, but also of shipping centers, hospitals, schools, and other public facilities so much in demand by a burgeoning population. That the new expressways trigger such developments is a common report from counties across the land.

The researchers have found that industry is avidly seeking out new plant sites accessible to new roads, and large "industrial parks" are being developed just off many routes. Manufacturers and distributors realize that an efficient highway system throughout the area expands the size of their market considerably. Some firms now located along the Santa Ana Freeway, for example, have found that it takes less time to get to the center of Los Angeles from their new outlying locations than it formerly did from their closer in-city sites.

Manufacturers have built dozens of new plants along the Eastshore Freeway outside San Francisco. In an area close to the highway which comprises only 9 percent of the total industrial acreage in Alameda County, industrialists have concentrated more than 43 percent of their total investment in new industry in the county.

Farmers are sometimes "hurt" when the engineers are forced to cut their way across country for a new superhighway, but the value of farm land also rises—usually more than enough to offset the inconveniences.

In the area of Hartford, Connecticut, directly under the influence of the Wilbur Cross Highway, an analysis showed that, in general, towns subject to expressway influences have increased in number of dwelling units and, by inference, in rate of property marketability to a greater extent than have those communities not subject to such influences.

The construction of new houses in Connecticut has been greatly accelerated along the parkways and expressways and also in the

communities under the influence of these new limited-access highways. Many of the new residential properties either abut directly on the right of way of the parkway or expressway, or are within sight of it. In one section of more than 1,000 dwellings in East Hartford, costing between \$9,500 and \$20,000 (and up), all the dwellings are within four minutes' driving time of the Wilbur Cross Highway and most of the more expensive ones either within sight of the expressway or within two or three hundred yards of it.

An extensive survey showed, beyond a shadow of a doubt, that land adjoining or near the Merritt Parkway sold, in most cases, at prices as high as, and sometimes higher than, comparable land some distance removed. The only instances in which lower prices were reflected involved properties below the level of the parkway.

The foregoing indicates that certain general conclusions are warranted. Connecticut communities, subject to express highway influence, have increased in population and industrial and commercial activities at a far more rapid pace than those not subject to such influences, much of this at the expense of the urban centers.

All in all, it appears reasonable to conclude that the express highway system has brought the country to the city and the city to the country, and further, that its effect has been extensive.

TURNPIKE REVENUES

The surplus revenues of the New Jersey Turnpike have been assigned as the major source from which the cost of the bond issue would be paid. We are all aware of the phenomenal growth in traffic and revenues—far ahead of expectations—which the turnpike has experienced. Its potential, however, was recognized more than a decade ago.

Mr. Paul Troast, former Chairman of the Turnpike Authority, said, in 1952:

We have a problem of out-of-state through traffic which is not matched anywhere in the United States. The Turnpike was built to solve, in part, this extraordinary problem, and it is solving it well.

The average trip on the New Jersey Turnpike is about fifty miles, and every traffic count has indicated that 60 or more percent of the vehicles paying tolls and using the Turnpike, bear license plates of States other than New Jersey . . .

If we would care to look down the road to the time when the present

Turnpike has liquidated its indebtedness and reverts to the State debtfree, we can see vast millions of dollars available to the State for highway improvements from Turnpike revenues alone, if tolls are maintained.

A recent estimate of the turnpike's future revenue growth indicated that beginning this year the toll collections would increase on a gradually declining scale from 5 percent in 1963 to 1 percent in 1974, when it was believed that existing traffic lanes on the turnpike would reach saturation.

The highway department's own projections indicate that the above estimate is conservative, and that the turnpike should continue to experience some traffic and revenue growth beyond that date. This is particularly true of the southern section.

The revenue structure of the Garden State Parkway is entirely different from that of the turnpike. The major portion of its bonds are guaranteed by the state. As a result, the highway department has been, and will continue to be, careful not to jeopardize the future income of the parkway.

MILEAGES

New Jersey Turnpike:	
Deepwater to George Washington Bridge	118.0 miles
Newark Airport to Holland Tunnel	7.0 miles
Pennsylvania Turnpike Extension	5.8 miles
	Total
	130.8 miles
Garden State Parkway:	
Cape May City to Montvale	173.0 miles

THE PROBLEM OF URBANIZATION

The phenomenal population growth of New Jersey in recent years is well known. Many of the communities in this state are perfect examples of what is termed "urban sprawl." This congestion, this crowding together of our residential areas, is already creating tremendous problems for our highway designers. The task of placing a major freeway through the heart of a developed area and then winning public acceptance of the alignment is heartbreaking. And every attempt to satisfy local desires adds to the cost—substantially. There is absolutely no reason to hope that this trend will reverse itself. New Jersey's geographical position at the hub of

the greatest metropolitan complex in the world—stretching from Boston to Washington—renders that impossible.

In the older metropolitan areas in other countries where the ratio of population to the available land has become critical, the cost of obtaining land for public purposes has become almost prohibitive. For instance, we were represented at the recent United Nations-sponsored study week of the new railroad developments in Japan. On his return, our delegate reported that the cost of the new railroad being constructed from Tokyo to Osaka—a distance of 323 miles—averages about 2.5 million U.S. dollars per mile, or about 900 million Japanese yen per mile. This unusually high cost for construction in Japan is attributable to the many miles of elevated structure being built to minimize right-of-way costs. Even so, the cost of the land over the entire route amounts to 21 percent of the construction cost.

In the Tokyo metropolitan area, a 43-mile-long toll expressway is nearly completed. Because of the very high cost of obtaining right of way, 35 percent of the 43 miles is being constructed on viaducts over rivers or canals, 38 percent by double-decking existing streets or highways, 13 percent over other public land and only 14 percent on newly acquired right of way.

I am sure, because of the many objections we have received against elevated freeways, that this type of design will never be popular in New Jersey.

An illustration of the high cost of real property in Tokyo is found in the April 19 edition of the *Japan Times*. Under the Real Estate listings in the classified section two vacant lots are listed for sale. One, 70 by 100 feet, on a corner, lists for 6,000 yen per square foot, which is at the rate of \$726,000 per acre, or \$16.65 per square foot. Another slightly smaller lot lists for 5,850 yen per square foot, or about \$700,000 per acre.

TRAFFIC QUARTERLY

ESTIMATED DIVERSION OF HIGHWAY USER REVENUES—1962-63

Revenues for 1962-63 Estimated—from Sale of Motor Fuels and

Motor Vehicle License Fees:

Motor Fuels	\$ 124,500,000
Motor Vehicle Fees, Fines, etc.	81,474,762
	<hr/>
	\$ 205,974,762

1962-63 Appropriations

Highway Department (General)	\$ 21,618,758	
Debt Service	2,880,678	
RR Trans.	6,000,000	
State Aid	16,615,701	
Construction	41,232,880	
	<hr/>	\$ 88,348,017
State Police		7,760,876
Motor Vehicle Department		9,882,899
Gas Tax Division		593,884
Delaware River Joint Toll Bridge		312,594
Pensions, Insurance, Social Security Tax, Hospitalization, Salary Adjustment for:		
Highway Department	}	Estimated share
State Police		
Motor Vehicle		
Gas Tax Division		
Total Appropriations		\$ 112,220,270
For Other State Purposes		<hr/> \$ 93,754,492

STATE HIGHWAY SYSTEM MILEAGE GROWTH*

LANES	MILEAGE		LANE MILEAGE	
	Jan. 1, 1954	Jan. 1, 1963	Jan. 1, 1954	Jan. 1, 1963
2	1,180.8	1,110.3	2,361.6	2,220.6
3	53.5	46.2	160.5	138.6
4	542.1	645.6	2,168.4	2,582.4
5	2.0	3.8	10.0	19.0
6	12.6	75.2	75.6	451.2
8	8.6	10.9	68.8	87.2
10		2.0		20.0
16		0.1		1.6
Total	1,799.6	1,894.1	4,844.9	5,520.6

*This chart, while not indicating the full amount of new construction in the period from Jan. 1, 1954 through Jan. 1, 1963, illustrates the trend toward increasing the capacity of the state highway system through construction of additional lanes. It will be noted that the mileage of two- and three-lane highways has diminished, while the mileage of four- and six-lane highways has greatly increased. The over-all increase of 675 lane miles is the equivalent of more than 168 miles of four-lane highway.

HIGHWAY FINANCES IN NEW JERSEY

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TYPICAL BENEFIT-COST RATIOS*

<i>Route</i>	<i>Description</i>	<i>Benefit-Cost Ratio</i>
80	George Washington Bridge to Garden State Parkway	8.85
287	Middlesex Freeway from Outerbridge to Route 22	11.6
80S and 42	Camden North-South Freeway from Benjamin Franklin Bridge to Turnersville	7.4
280	Essex Freeway	14.2

*Note—These ratios show the return to the motorist for every dollar invested in highways. For example, every dollar invested in the Essex East-West Freeway will return \$14.20 in terms of faster, safer, and more convenient travel during a 30-year period.

SUMMARY OF BENEFIT-COST RATIO VALUES

Cost

Roadway = 30 year life
 Bridges = 50 year life
 Drainage = 50 year life
 Earthwork = 150 year life
 Right of Way = 150 year life
 Maintenance }
 Policing } \$2,000 per year per mile
 Administration }

Benefits

Time saved:

Passenger cars = 1.5 cents per car minute
 Trucks = 3 cents per light truck minute
 = 3 cents per medium truck minute
 = 4 cents per heavy truck minute

Convenience:

Center Island = 0.1 cent per vehicle mile

Intersections:

Major = 0.1 cent per vehicle
 Minor = 0.01 cent per vehicle

Congestion:

Over tolerable capacity = 2 cents per vehicle mile
 Over satisfactory capacity = 0.4 cents per vehicle mile
 Island Openings = 0.01 cent per vehicle per opening
 Shoulders = 0.01 cent per vehicle mile
 Parking = 1 cent per vehicle mile
 Driveways = 0.5 cent per vehicle mile

TRAFFIC QUARTERLY

Operation Costs:

Reduced Mileage:

Passenger cars = 3 cents per car mile
 Trucks = 4 cents per light truck mile
 = 10 cents per medium truck mile
 = 20 cents per heavy truck mile

Stops and Starts:

Passenger cars = quarter cent per car stop
 Trucks = half cent per truck stop

Steep Grades:

Passenger cars = variable
 Trucks = variable

Poor Roads:

Passenger cars = quarter cent per car mile
 Trucks = half cent per truck mile

Safety:

Accidents = \$ 250
 Injuries = 50
 Fatalities = 23,000

Miscellaneous = \$1,000 per new road mile created

Generated traffic = 4 cents per vehicle mile

15 percent of value of time benefit

2 percent of value of convenience, operation costs and safety