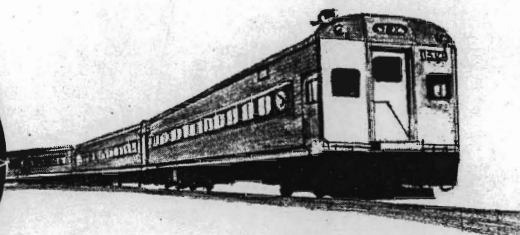


From
Indian Trails
to
Rapid Transit



**THE
DEVELOPMENT
OF
TRANSPORTATION
IN
NEW JERSEY**



OFFICE OF
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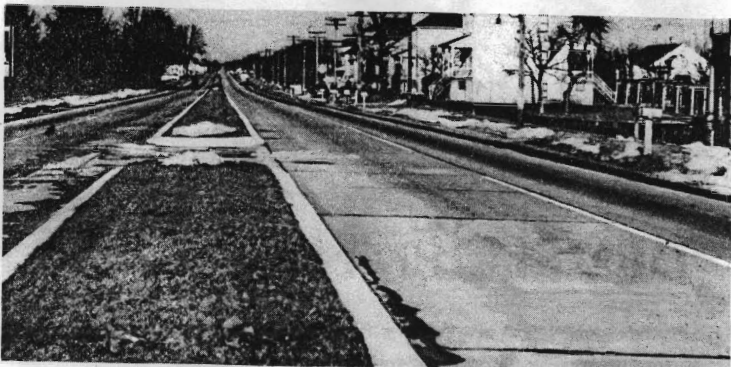
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Route 1 1977



Route 1 1938



Route 1 1933



Route 1 1920

foreword

The story of growth and progress in New Jersey has paralleled the development of transportation in New Jersey. From a handful of Indian trails and natural waterways, the State's transportation system evolved into complex networks of highway, rail, air and marine facilities.

The past century has seen New Jersey transformed from a sparsely populated agricultural state to a highly urbanized economy, dynamic and versatile in industrial productivity. It was during those years of change that it became increasingly apparent that the movement of people, products and materials in a safe and expeditious manner is vital to a highly developed and complex economic system.

In this booklet is outlined briefly the history of transportation in New Jersey from Colonial times through the reorganization in 1971 of the New Jersey Department of Transportation. Acknowledgement and thanks must go to the New Jersey Historical Society, whose publication, "New Jersey - A History," has been the principal source of information on the State's early roads.

It is hoped you will find this history of the growth of transportation in New Jersey interesting as well as informative.

*Office of Information Services
New Jersey Department of Transportation*

January, 1972

STATE ADMINISTRATORS - 1892 TO 1972

1892-1894--Edward Burrough, as president of the State Board of Agriculture, was made responsible for administration of the 1891 State Road Aid Law.

Commissioners of Public Roads:

1894-1895--Mr. Burrough was appointed State Commissioner of Public Roads under a May 17, 1894, act creating that office.

1895-1905--Henry I. Budd.

1905-1908--Elijah C. Hutchinson.

1908-1911--Frederick Gilkyson; In 1909, the legislation initiated a four-member State Highway Commission, which included the Commissioner.

1911-1917--Col. Edwin A. Stevens; On March 3, 1917, a new act provided that a State Highway Department be governed by an eight-member State Highway Commission which would select a chairman at its organization each year.

State Highway Commission, Chairmen:

1917-1920--John W. Herbert, Helmetta.

1920-1923--George L. Burton, South River; The State Highway Commission was reduced to four members in 1923 and retained that number until 1935.

1923-1933--Maj. Gen. Hugh L. Scott, Princeton.

1933-1935--Col. Arthur F. Foran, Flemington; In 1935, legislation again set up a single Commissioner, to be appointed by the Governor.

State Highway Commissioners

1935-1942--E. Donald Sterner, Belmar.

1942-1950--Spencer Miller, Jr., South Orange.

1950-1954--Ransford J. Abbott, Red Bank.

1954-1966--Dwight R. G. Palmer, Short Hills.

1966 (Jan-July)--Russell H. Mullen (Deputy; Acting), Hamilton Township; On December 12, 1966, the Legislature passed the "Transportation Act of 1966," which established an overall Department of Transportation to be administered by a single Commissioner appointed by the Governor.

Commissioners of Transportation:

1966-1970--David J. Goldberg, Lawrence Township.

1970--John C. Kohl, Trenton.

1. FOOTPATHS AND EARLY ROADS

THE EARLIEST VESTIGES of what might be considered highways in New Jersey were the trails which connected seasonal hunting grounds of the native Indians. It was from the network they formed that the earliest roads grew.

Largely footpaths only twelve to eighteen inches in width, they connected the natural waterways and inland points and provided long overland routes.

The three major overland trails in use before 1700 by the English and Dutch were known as the Minnisink Trail, the Upper Road, and the Old Burlington Path.

The Minnisink Trail afforded a route for the Minnisink Indians to travel from their Pennsylvania hunting grounds to the seashore. There they obtained fish for food and shells for wampum. The trail started at Minnisink Island, in the Delaware River below Port Jervis, went north of Morristown, west of Springfield, six miles west of Elizabeth, four miles west of Amboy, through Shrewsbury, then to the sea.

The Upper Road, or High Road, was a combination of several trails by the Dutch and afforded a route between New Amsterdam and their Lower Delaware settlements. It started at Elizabethtown, passed through Woodbridge and Piscataway, New Brunswick, Kingston, Princeton, Trenton, into Pennsylvania to Bristol and Philadelphia, and on to New Castle, Delaware.

A variation of this route branched off about five miles past New Brunswick, went down through Cranbury and Burlington, and crossed the Delaware River into Pennsylvania at Mattinicunk Island halfway between Burlington and Bristol.

The Old Burlington Path originated in Monmouth County near Sandy Hook, passed through Shrewsbury, Middletown, skirted Freehold, and went through Allentown, Crosswicks, Bordentown, Burlington, and Haddonfield on its way to Salem.

Both the Upper and Lower Roads, as well as the Old Burlington Path, became known as the King's Highway.

PUBLIC ROAD LEGISLATION

The first movement toward formalizing roads, as such, came in 1673. At that time the General Assembly of the Province of East Jersey passed its first Public Roads Act. This was followed in 1676 by the second Public Roads Act, aimed at providing a road from Middletown to Piscataway.

The road-building horizons were widened in 1682 when the General Assembly passed an act for "making and settling of highways, passa-

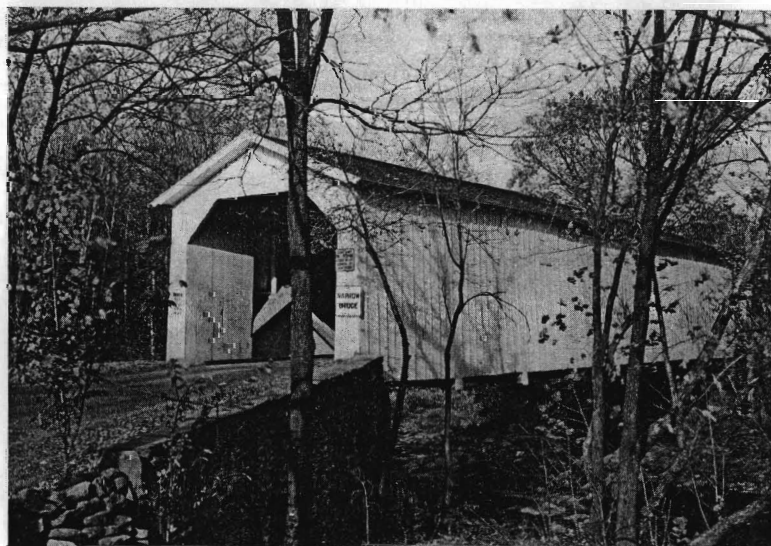
ges, landings, bridges and ferries....fit and apt for traveling” and named specific men in each county to lay out and build roads - the expense to be met by county taxes.

Under that act, roads were opened in all directions, connecting the existing two main roads at various points and linking then-existing plantations, farms and growing towns. The impetus lasted into the beginning of the 18th Century. It was early in this period that a route later to be known as the Lower Burlington Path was established. It started at Perth Amboy, where a ferry connected to New York, and went through South Amboy to join the Old Burlington Path.

The Province of West Jersey first officially felt the need for a road system in November, 1681, at which time its General Assembly required that a road be built connecting Burlington and Salem. In 1684 it enacted several more road projects between Delaware River towns.

ROADBUILDING SLOW

The earliest roads achieved little distinction in safety or comfort. The evolution of most from Indian footpaths to horse-and-rider trails, and then to a width sufficient to accommodate a wagon or coach, left much to be desired. Little pains were taken with the roadbeds, and even the traveler on horseback had to be wary of the stumps and mud-holes.



Covered Bridge



Early Earth Mover

By the 18th Century, the two Jerseys still had little in the way of formal roads and the roadbuilding process was very slow. Although counties and townships had some authorization, they had little power to collect taxes. The road work was largely dependent upon compulsory road service required of all inhabitants. The law usually limited such service to six to eight days a year.

Natural earth was the universal roadbed. Steep grades, deep ruts and seas of mud were common. Attempts were made to alleviate these conditions by laying tree trunks across the roads - a device known as “corduroying.” Coaches frequently overturned. The ruts were so deep that the driver would get assistance from the passengers in keeping the coach upright by calling for shifts of weight: “Now, gentlemen, to the right,” or “Now, lean to the left!”

POST-REVOLUTION CONDITION

After the Revolution, there was a rapid increase in the use of vehicles and, as a result, the roads were increasingly in disrepair. The compulsory labor system broke down. Taxes were inadequate, also hard to collect. The trip from New York to Philadelphia by stage coach took two days.

It cost about as much to transport goods as it did to produce them; in some instances, it cost more. Salt, for example, sold for a penny a pound at the Shore, but sold for six cents a pound inland.

In the latter half of the 18th Century, the science of roadbuilding was beginning to be recognized. In England, turnpike companies were established to improve the roads. The 400-mile trip from Edinburgh to London had taken 12 to 16 days earlier in the century and there was one stage coach a month. By 1783, the roads had been improved to such an extent that there were 60 coaches a month and the trip was made first in four days and later in 60 hours. In America at the same time, coaches were making only 20 to 25 miles a day.

VARIOUS FINANCING METHODS

New Jersey and New York inaugurated systems under which major roads were built by the State but maintained by the townships. New York also put in effect a plan under which land grants were offered to those who built roads. Money grants were made to townships to repair roads and build bridges.

English roadbuilding methods were called to the attention of the New Jersey legislatures. In 1788, Pennsylvania started talking about a turnpike for the Lancaster Road and, after resorting to lotteries to make repairs, finally granted turnpike rights to a private company.

New Jersey also tried the lottery idea for quite awhile, but a private company was formed in 1795 to build a road from Philadelphia to New York. It was estimated to cost \$300,000. About one-fourth of this was subscribed, but the plan lapsed.



Early Improved Road

II. THE "TURNPIKES"

The First Turnpike Era, so-called, was about 1801-1828. Actually, in 1785 there was a Maryland-to-Virginia proposal by a company headed by George Washington.

New Jersey rapidly became one of the greatest travel corridors in the United States, mainly because of its position between New York and Philadelphia.

In 1801, the Legislature granted a charter to the Morris Turnpike Company for the first turnpike. This was from Elizabeth through Springfield, Morristown, Succasunna, Stanhope, Newton and Culver Gap to the Delaware River opposite Milford, Pa.

In 1802, the Legislature authorized the Belleville Bridge and Turnpike Company and the Bergen Turnpike Company. The Bergen Turnpike, on which tolls were collected for more than a century, led from a ferry in Hoboken, across Overpeck Creek and the Hackensack River to Hackensack.

In 1804 at the height of the turnpike movement, the Trenton-New Brunswick and the Newark Turnpikes were authorized. They made up part of what was to become the most important through highway from New York to Philadelphia, U. S. Route 1.

The Trenton-New Brunswick Road was finished in 1907. Albert Gallatin, U. S. Treasury head, reporting on the status of a national road project a year later, described it as "36 feet wide, 15 feet of which are covered with about 6 inches of gravel." A few wooden bridges with stone abutments and piers were included. The cost for the 25-mile stretch was about \$2,500 a mile.

Except in one instance, New Jersey took no part in the movement to give State aid to turnpike companies. The one exception was the Newark Turnpike, for which the Governor was authorized to subscribe \$12,500 for company stock.

OTHER ROADS CHARTERED

The Newark-and-Pompton and the Paterson-and-Hamburg Turnpikes were chartered in 1806. The former ran from Newark (N. Broad Street) through Bloomfield to Pompton. The latter ran from Acquackanock Landing (now Passaic) through Paterson, Pompton, Newfoundland, Hamburg and Deckerton (now Sussex) to the Delaware River opposite Milford, Pa. An extension carried one branch to the Passaic River at Belleville. Another went from Passaic to the Hackensack-and-Hoboken Turnpike on the same line that was later used for the Paterson Plank Road. It served chiefly as a farm-to-market road to New York City.

The first New Jersey Turnpike, also chartered in 1806, ran from New Brunswick through Bound Brook, Somerville, Potterstown and

Bloomsbury to Phillipsburg on the Delaware River. It was later extended to Perth Amboy through Metuchen.

The Bordentown-and-South Amboy Pike came along in 1816 as part of the New York-Philadelphia route.

Between 1801 and 1828, charters were granted for 54 turnpike companies, but only about 30 turnpikes were actually built. About 500 miles of roads were constructed, and the surfacing was mostly dirt and gravel.

The three biggest centers of the state network in this period were Newark, Morristown and Paterson. Three thoroughfares ran between Philadelphia and New York: Trenton, New Brunswick and Newark; Bordentown and South Amboy; and Lambertville, Somerville, Plainfield and Newark.

Between 1828 and 1849, only five new turnpikes were chartered. But, in 1849 with the new plank-road enthusiasm in full swing, 10 new roads were legislated and during the next turnpike era of a quarter century some 200 companies were chartered. Most of these were in the southern sections of the State where Camden and Mt. Holly became road centers.

Some states permitted construction of free roads from one point on a turnpike to another. These were known as "shunpikes". The turnpikes were successful in getting legislation against such roads. A New Jersey Act provided a penalty of three times the legal toll for getting on a shunpike and avoiding passing through the turnpike's toll gate. Other New Jersey Acts provided that a person who willfully broke or defaced a road marker or mile stone, damaged a gate, or forcibly passed through without paying toll, be subject to a fine of \$20 in addition to a civil suit for damages.

A turnpike company was given two years from the date of its charter to begin construction. Generally, the time allowed for building varied with the length of the proposed route.

Even the poorest turnpikes, however, were built with some scientific features in mind - distances were shortened by keeping the roads from winding more than necessary; grades were diminished; roadbeds were raised and given proper shape for drainage; ditches were provided and bridges were built over intervening streams.

The contracts were let usually for five or ten-mile sections. The contractors lived along the route and generally were members of the turnpike company. Labor was drawn from the surrounding area, and the work was usually done in late summer and early autumn when farm work was the least pressing.

The first job was to clear the right-of-way of timber and then take out the stumps and large rocks. The roadbed was then raised by throwing earth from the sides to the center, automatically creating drainage ditches on both sides of the road. In many instances this bed remained as the riding surface.

The surfacing varied. Most legislation provided the road "shall be bedded with stone, gravel, sound wood or other hard substances well compacted together and of sufficient depth to secure a good solid foundation." In New Jersey, roads were almost entirely earth and gravel. New York law required a facing of gravel or broken stone to a depth of nine inches. Actually, the surface was formed of whatever was available in the vicinity.

For stone-faced turnpikes built during this era, most surfacing was done by the following Telford method. The lower part of the stratum was composed of stones broken into pieces five to eight inches in diameter. Over this was spread a layer of $\frac{1}{2}$ to $2\frac{1}{2}$ -inch stones for a depth of six inches in the center, falling away to three inches on the sides. Over this was spread a thin layer of stone dust, gravel or coarse sand to help bind the materials together.

Early engineers began to doubt the need for these different sizes of stones. By 1830 the macadam system of compacting a layer of small broken stones on a convex, well-drained, earth roadbed became the popular type of construction.

Compacting of the surface, despite the turnpike legislation calling for it, was seldom accomplished. Therefore, travelers would use the "summer roads" when possible to avoid the covering of loose stones and gravel in dry seasons.



Highway Construction Early 1900s

III. THE NEW ROADWAYS

Canals and railroads drove the turnpikes out of existence. Canal building had begun in other States vitually with the turnpikes. Railroads followed in the 1830s, the first being used in 1826 to carry coal from Mauch Chunk, Pa.

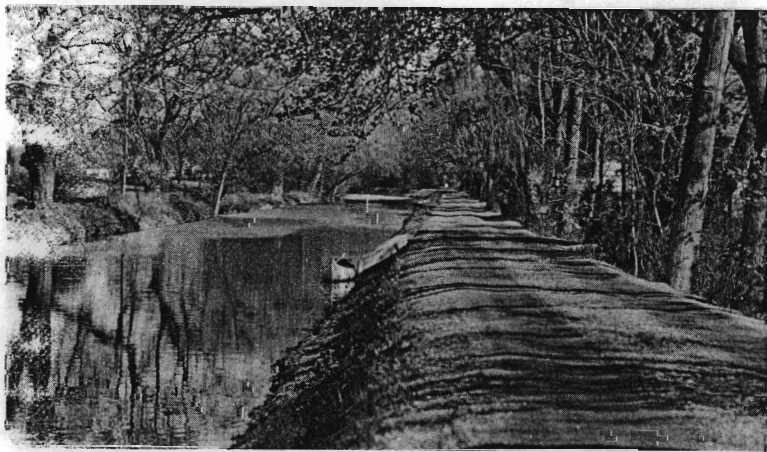
New Jersey was late with canals. The Delaware and Raritan Canal, begun in 1834 and completed in 1838, was one of the most successful ever built. The Morris Canal opened in 1836.

The canals lowered freight rates substantially. The Erie Canal, for example, dropped rates from Buffalo to New York from \$100 to \$5 a ton and cut the travel time to one-third.

PLANK TOLL-ROAD MOVEMENT

Toll roads came back into the picture in 1849 with the plank road movement. These had floors of sawed timber and were regarded as the cheapest and easiest type to build. They began in Russia early in the 1800s and were introduced in Canada in 1834, after which their use spread to the United States.

Before the era ended, New Jersey had 25 such roads. At least \$10 million was spent in building about 7,000 miles of planked roads in New Jersey, New York, Pennsylvania and Maryland. They were small enterprises ranging in cost from \$4,000 to \$100,000, few of which exceeded \$50,000, and were usually financed by individuals and business interests along the roads.



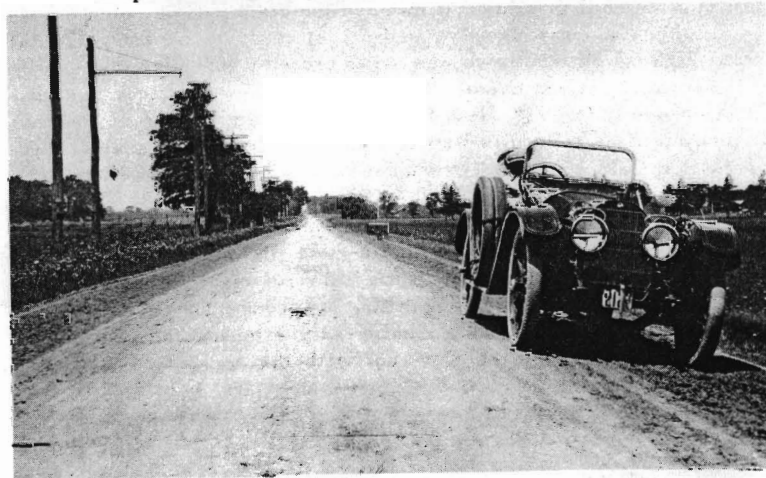
Canal and Towpath

They were the smoothest roads built in their time. Normally built right on top of existing roads, they consisted of a base of 3-inch thick and 6-inch wide hemlock laid 6 inches apart and overlapping, and filled in with well-rammed earth. A 3-inch thick wooden floor 8 to 11 feet wide was built on top of that. Because approaching and overtaking vehicles had to run one set of wheels off the planking in order to pass, shoulders were made even with the planks. Cost of construction ranged from \$1,000 to \$5,000 a mile, with the average being about \$1,800 a mile. Two-animal vehicles paid tolls of about 1½ cents a mile. Life of the planking was about 5 years.

MACADAM ROADS INCREASE

By the turn of the Century, a new and powerful voice had been added to the clamor for still better roads. In addition to the farm-to-market group, the large membership of bicycle clubs became a demanding factor. They needed hard-surfaced roads to accomodate their wide activities. The answer was an increase in the number of roads surfaced with water-bound macadam.

This type of smoother surfacing consisted of a layer of large pieces of broken stone. The voids between the stone were filled with smaller pieces of stone and stone dust. The smaller aggregate and particles were flushed in with water. Surplus material was brushed into the top of the layer to form a relatively smooth surface. A tightly knit pavement resulted when the material dried, as a natural cementing action took place to some degree.



Early Macadam Road

STATE AID FOR PUBLIC ROADS

In 1881, New Jersey moved to the foreground in the national roads picture by becoming the first state to grant state monetary aid in the building of public roads. The legislative act that accomplished this provided aid to the counties in the construction of highways to the extent of one-third of their cost, and appropriated \$75,000 annually to be expended by the State's Secretary of Agriculture as administrator of roads.

The Legislature followed through in its recognition of the need for improved roads by providing for the appointment of a State Commissioner of Public Roads in 1894. The Commissioner was required to perform all duties with respect to the public roads of the State that had previously been assigned to the Secretary of Agriculture in 1892. In addition, he was authorized to collect data with respect to permanent highway construction that would best serve the interest of the public.

The next important step in New Jersey highway development occurred in 1909 with creation of a State Highway Commission by the Legislature. The Commission consisted of the Governor, President of the Senate, Speaker of the House, and the Commissioner of Public Roads. The main function of this commission was limited to supervising preparation of a plan for an "Ocean Highway" from Atlantic Highlands to Cape May.

FIRST STATE HIGHWAY SYSTEM

In 1912, the Legislature recognized the need for an integrated system of State-built highways. It directed the State Highway Commission to establish a comprehensive network of roads to be known as the State Highway System which was not to exceed 1,500 miles.

Under this act, an overall State highway plan really took hold and began to grow. In 1912, New Jersey laid its first section of concrete highway at New Village in Warren County. In the ensuing period, highways were laid out with more durable characteristics, and the automobile came into prominence.

In 1917, the State Legislature again stepped conspicuously into the highway picture. A new act created a State Highway Department to be governed by a State Highway Commission of eight members, two of which were required to be qualified and competent engineers. The Governor was designated as a member ex-officio, and the Commissioners were appointed by the Governor with the advice and consent of the Senate.

ORIGINAL 15 ROUTES LEGISLATED

At the same time, the Legislature spelled out the nucleus of the State Highway System of today by designating 15 routes as the Sys-

tem. It provided that existing highways could be used wherever convenient to do so, but allowed the Commission to build new ones over acquired rights-of-way and others in continuation of, connecting with, or in addition to those legislated.

The original 15 routes were described as follows:

ROUTE NO. 1. From Elizabeth to Trenton by way of Rahway, Metuchen, New Brunswick and Hightstown.

ROUTE NO. 2. From Trenton to Camden, by way of Bordentown, Fieldsboro, Roebling and Burlington.

ROUTE NO. 3. From Camden to Absecon, by way of Berlin and Hammonton.

ROUTE NO. 4. From a point on Route No. 1 in or near Rahway to Absecon, by way of Perth Amboy, Keyport, Middletown, Red Bank, Long Branch, Asbury Park, Point Pleasant, Lakewood, Toms River, Tuckerton and New Gretna.

ROUTE NO. 5. From Newark to the bridge crossing the Delaware River about two miles above Delaware, by way of Morristown, Dover, Netcong, Budd Lake, Hackettstown, Buttsville and Delaware.

ROUTE NO. 6. From Camden to Bridgeton and Salem, by way of Woodbury, Mullica Hill, Woodstown and Pole Tavern.

ROUTE NO. 7. From Hightstown to Asbury Park, by way of Freehold, Jerseyville and Hamilton.

ROUTE NO. 8. From Montclair to State line at Unionville, by way of Singac, Wayne, Pompton Plains, Butler, Newfoundland, Stockholm, Franklin Furnace and Sussex.

ROUTE NO. 9. From Elizabeth to Phillipsburg, by way of Westfield, Plainfield, Bound Brook, Somerville, White House, Clinton, West Portal and Bloomsbury.

ROUTE NO. 10. From Paterson to Fort Lee Ferry, by way of Dundee Lake and Hackensack.

ROUTE NO. 11. From Newark to Paterson, by way of Belleville, Bloomfield, Nutley and Passaic.

ROUTE NO. 12. Paterson to Phillipsburg, by way of Little Falls, Pine Brook, Parsippany, Denville, thence over Route No. 5 to Budd Lake, thence to Washington and Broadway.

ROUTE NO. 13. New Brunswick to Trenton, by way of Kingston, Princeton and Lawrenceville.

ROUTE NO. 14. From Egg Harbor City to Cape May City, by way of Mays Landing, Tuckahoe and Cape May Court House.

ROUTE NO. 15. From Bridgeton to Cape May Court House, or such other point on Route No. 14 as may be determined by the State Highway Commission.

IV. THE AUTOMOBILE ARRIVES

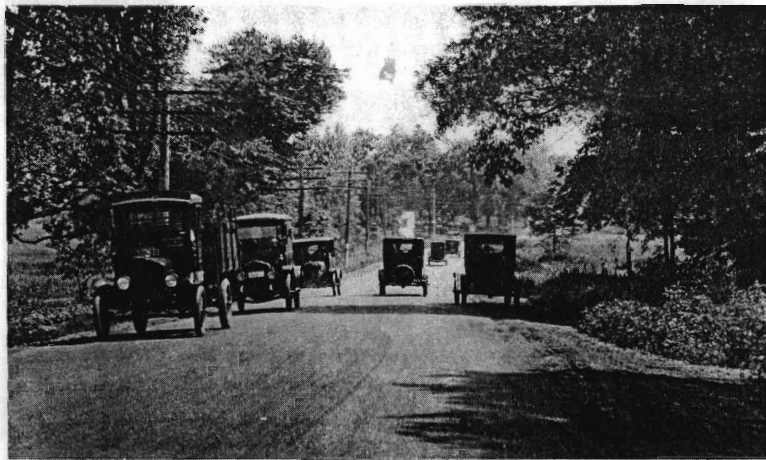
Following World War I, the automobile came into wider use, and the need for more and better highways soon became evident. Also, the demand was created to "get the farmer out of the mud," and this resulted in many hard-surfaced roads being constructed by counties as well as by the State in the more sparsely settled sections. Late in the 1920s, roads were widened to three lanes and emphasis was placed upon the further development of intersections. This was the period when New Jersey built the nation's first cloverleaf and first traffic circles, as well as its first divided roadways.

State highway expenditures reached a new peak in the early 1930s when many new routes were built and dual highways became the design standard where traffic volumes justified their construction.

Bridge design also underwent a change during this period. The trend was more and more to the high-level permanent type of bridge rather than the movable bridge which held up traffic, the volume of which was increasing rapidly each year.

STATE HIGHWAY COMMISSION CHANGES

Organizational refinements of the Highway Department were undertaken by the Legislature during the 1920-1940 period of highway construction and expansion. In 1923, the eight-man State Highway Commission was replaced by a four-member commission.



Traffic in the 1920s

Then, in 1935, the four commissioners were completely supplanted by just one State Highway Commissioner to serve under the Governor as administrative and executive head of the Department. This structure prevailed until December 12, 1966, by which time transportation conditions in the State and its region had undergone extensive change.

DECADES OF CHANGE

In the late 1920s and early 1930s, New Jersey had achieved a national reputation for its enterprise and excellence in the transportation field. Its highways, bridges and intersection innovations were widely emulated. Its railroad system was among the best.

In the 1930s, the nation suffered its most severe economic depression; in the 1940s, the costliest war to date was followed by the "cold war." In those decades of uncertainties, the efforts by New Jersey to meet its ever-mounting transportation problems encountered a variety of difficulties.

From 1948 to 1969, the total travel on New Jersey's highways tripled until it amounted to about 37 billion vehicle-miles a year. Recent projections indicate there will be 72 billion vehicle-miles traveled on New Jersey highways in 1990, or about double the mileage for 1969. Also projections of population and transportation trends to 1990 indicate that the State is facing a population expansion in excess of 10 million and that demands by State highway users will be increasingly heavy.



First Traffic Circle, Camden, 1925

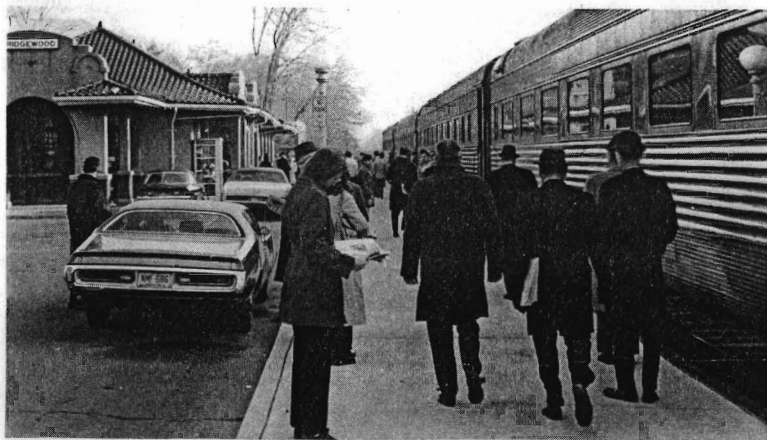
With the federal census of 1970, New Jersey was identified as the most densely populated State in the nation situated as it is in the center of the rapidly evolving Boston-to-Washington megalopolis. The State's ratio of motor vehicle registrations to inhabitants is now almost one car for every two persons.

However, for New Jersey's railroads, it has been a different story. These carriers once had a dominant role in transporting people and goods and they prospered. Autos, trucks, buses and airplanes have long since changed that picture. Rail revenues, particularly from passenger service, dropped steadily and drove some carriers to bankruptcy and others to the brink of insolvency.

RAILROAD TRANSPORTATION DIVISION

The commuter rail transportation activities of the Department were initiated in late 1958 when the Governor requested the Commissioner to study New Jersey's commuter rail problem and make recommendations toward its solution. Early in 1959, in advance of shutdown of the West Shore Division of the New York Central Railroad and the ferry which transported many passengers across the Hudson River between Weehawkin and New York City, the Commissioner made suitable arrangements with bus lines serving the area so that when the shutdown occurred no commuters would be inconvenienced.

Spurred by this experience and other impending cutbacks in rail transportation, legislation creating a Division of Railroad Transportation within the then State Highway Department was enacted on March 4, 1959. In April, 1960, the Division released a report containing suggestions for immediate remedial action and long-range proposals,



Erie Lackawanna Railway Commuters



Bus Commuters

This received public endorsement, and the Commissioner negotiated contracts with all major commuter lines ensuring continuation of essential passenger service in the State. The program cost at the start was less than \$6 million a year, or less than the cost of constructing one mile of modern freeway in an urban area. This pioneering program provided for payments to the carriers on the basis of the financial loss they would have avoided if they were not required to furnish service under the agreements. From 1961 to 1971, the total of annual payments appropriated by the Legislature for this purpose amounted to some \$86 million.

ASSISTANCE FOR BUSES

Because of the continuing financial deterioration in bus operations, the Legislature in 1969 approved a similar support program for essential bus services in imminent danger of abandonment. The State's contribution of 75 percent of a subsidy must be matched by 25 percent from the County in which the service is considered essential. In three years of operation, 16 lines throughout the State have been allocated a total of \$2.2 million in assistance.

After prolonged negotiations, in which the Commissioner represented New Jersey, legislation was enacted in 1962 directing the Port of New York Authority to acquire, rehabilitate and operate the Hudson and Manhattan Railroad in conjunction with construction of a World Trade Center on the west side of Manhattan in the area of the railroad's present terminal.

V. TRANSPORTATION DEPARTMENT CREATED

It was an awareness of major deficiencies in all areas of transportation, as well as deep concern about the future, that prompted establishment of the Department of Transportation on December 12, 1966, by the Legislature.

New Jersey was the first State to adopt the concept of an integrated approach to all transportation problems. Even the U.S. Department of Transportation did not become operational until nearly four months later.

Under the Transportation Act of 1966, the newly created Transportation Department absorbed the functions of the State Highway Department as well as the Bureau of Aeronautics, which was transferred from the then Department of Conservation and Economic Development.

The law provides for a Commissioner of Transportation to head the Department, to be appointed by the Governor with the advice and consent of the Senate. In brief, the Act directs the Commissioner to assume the following responsibilities:

1. Develop and maintain a comprehensive master plan for transportation development.
2. Develop and promote programs to foster efficient and economical public transportation services in the State.
3. Prepare plans for the preservation and improvement of the commuter railroad system.
4. Develop plans for more efficient public transportation service by motorbus operators and facilitate more effective coordination between bus service and other forms of public transportation, particularly the commuter railroads.
5. Cooperate with interstate commissions and authorities, state agencies, appropriate federal agencies and interested private individuals and organizations in the coordination of plans and policies for the development of air commerce and facilities.

The Commissioner was empowered to appoint principal subordinates to assist him in carrying out his duties: An Assistant Commissioner for Highways who administers functions relating to design and development of highways and an Assistant Commissioner for Public Transportation who administers functions relating to public transportation.

RESPONSIBILITIES FOR COMMUTERS

A major policy-making body in the Department is the Commuter Operating Agency. It consists of four members: The Commissioner of Transportation, The Assistant Commissioner for Public Transportation, the

State Treasurer and the President of the Board of Public Utility Commissioners, or persons designated by them.

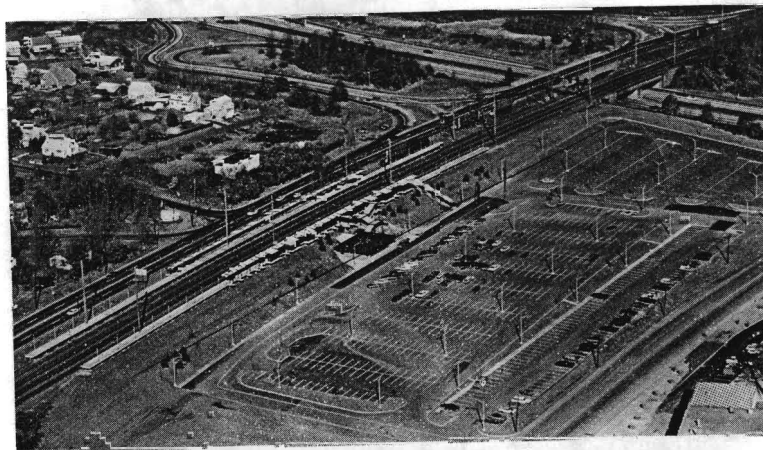
The COA has the authority to contract with rail and bus carriers to conserve and improve necessary commuter services and to contract for improvement of capital facilities essential to those services.

The Transportation Act of 1966 also authorized establishment of a Commuter Advisory Committee consisting of the Assistant Commissioner for Public Transportation as chairman and ten other members appointed by the Governor. These ten are comprised of: two citizens of the State who are commuters; two mayors of municipalities or two freeholders of counties served by railroads under contract to the State; two officials of unions representing employees of railroads under contract to the State; two officials of railroads or motorbus carriers under contract to the State, and two public members who are citizens of the State.

This committee's duties are to consult with and advise the Commissioner on problems of commuter service and to conduct such studies of specific commuter matters as the Commissioner may direct.

RAIL IMPROVEMENTS

One of the Transportation Department's accomplishments was the development of its Aldene Plan (named after a rail junction near Cranford). This project, a major consolidation of passenger service operated by the Central Railroad of New Jersey, went into effect April 30, 1967, shortly after the railroad had filed a petition of bankruptcy. It involved rerouting the Jersey Central's mainline and shore pas-



MetroPark Park-Ride Station

senger trains into Newark's Pennsylvania Station over the rights-of-way of the Lehigh Valley and Penn Central Railroads.

At Newark, Jersey Central passengers were given options of taking Penn Central trains to Pennsylvania Station in New York City, Port of New York Authority (PATH) trains to Hudson County cities and to downtown and Midtown Manhattan, or the Newark subway and various bus routes to New Jersey points and Manhattan.

The project involved new track connections, terminal and storage yard installations, track and signal improvements, a new passenger station, elimination of grade crossings and rehabilitation of passenger cars. It was financed by the State with Federal assistance approved by the Housing and Home Finance Agency. The Aldene Plan, by effecting an annual saving of \$1.5 million, recovered the State's investment by 1970 and made possible the abandonment of the Jersey Central's passenger terminal in Jersey City, its antiquated and costly ferry service, and the passenger terminal in Newark.

NEW CARS PURCHASED

In another of a number of moves to preserve and improve essential commuter service, the Department in 1967 awarded a \$9.9 million contract for manufacture of 35 stainless-steel, high-speed electric passenger cars for use by the Penn Central Company (formerly the Pennsylvania and New York Central Railroads) on its main line between Trenton and New York City. The State and Federal Governments shared the cost of these cars. Penn Central will lease the cars until 1977 and maintain them. This capital improvement was provided instead of the operating subsidies made available to the other railroads. The first



New Diesel Engine for Commuter Railroad

cars went into service between Trenton and Pennsylvania Station, New York City, on October 30, 1968. Another improvement for Penn Central is the new suburban park-and-ride station--MetroPark--near the Garden State Parkway in Woodbridge on the railroad's main line.

Other railroads also received improved equipment. Thirteen new locomotives were purchased to improve service on the Jersey Central. On January 21, 1971, the first of 105 new passenger cars and 23 locomotives purchased with \$26 million in Transportation Bond funds were placed in service on the non-electrified lines of the Erie Lackawanna Railway. A total of 205 cars, including equipment acquired from Western railroads, were refurbished and placed in service on the Penn Central, Erie Lackawanna, Jersey Central and on the Pennsylvania-Reading Seashore Lines in South Jersey.

DEVELOPMENTS IN AERONAUTICS

New Jersey has pioneered in the advancement and regulation of aeronautics. As early as 1913, the Legislature passed a law to regulate flying exhibitions. In 1929, it was among the first to adopt the "Uniform Aeronautics Act," which set up regulatory standards.

The State Department of Aviation, the office of the State Director of Aviation, and the State Aviation Commission were created by the Legislature in 1931. Regulatory measures for aviation also were enacted, and these were later modified and expanded, principally in 1939, 1952 and 1964.

In 1946, the Federal Government established the National Airport Plan for a nationwide network of airports to meet commercial and military emergency needs. The plan provided for Federal matching grants to public agencies for construction of publicly-owned airport facilities. Grants to New Jersey airports amounted to a total of more than \$24 million to mid-1969.

In 1948, after the Departmental reorganization set by the new State Constitution a year earlier, all aeronautic functions were transferred to the Department of Conservation and Economic Development. This group was transferred to and given divisional status in the Department of Transportation when the Department was created in 1966. With restructuring of the Department in 1971, responsibilities and operations of the Division were absorbed into other units on a functional basis.

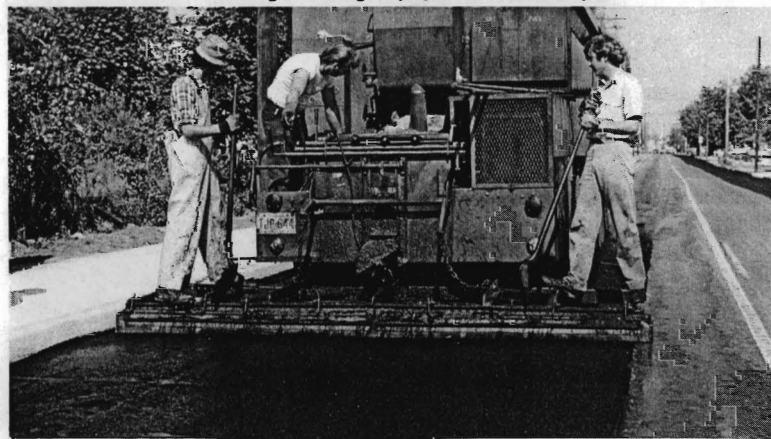
Among the Department's responsibilities in fostering commercial and general aviation in New Jersey are: Engineering and safety surveys; preparation of feasibility studies for airport development; inspection and licensing of airports, seaplane bases, heliports, air meets, parachute centers, fixed-base operators; enforcement of the aeronautic regulations; investigation of aircraft accidents; preparation and distribution of information bulletins on aircraft accident prevention; as well as statistical research relating to these activities. Flight training clinics are co-sponsored with the Aircraft Owners and Pilots Associ-

ation (AOPA) and other aviation organizations, and a program of promoting aerospace education is conducted.

New Jersey among all the States, has the highest pilot and aircraft density per square mile with about 18,000 licensed pilots and approximately 3,200 registered aircraft, not including commercial airliners. Air commerce is served by about 340 aeronautical facilities. These include 83 publicly and privately owned public-use airports and landing fields, 50 private aviation facility landing strips and some 200 heliports and helistops, both public and private. At the 57 most heavily used of the 83 public-use airports there were during 1970 approximately 2.5 million aircraft movements by general and commercial aircraft.



Testing Welding Equipment for Safety



Applying Non-Skid Test Surface

VI. HIGHWAY RESPONSIBILITIES

Vested in the Department are the continuing stewardship and development of all of the elements of the State Highway System.

Carrying out these responsibilities involves a number of important processes and operations such as planning, design, right-of-way acquisitions, materials control, construction, traffic engineering, maintenance, and local government aid.

PLANNING

In the planning for new facilities and the expansion of existing ones, the Department must constantly gather and analyze numerous statistics. This information is used for various purposes.

In one area it may point up the need for a completely new highway alignment or perhaps only widening an existing roadway. At another location, it may substantiate the desirability of constructing an overpass or justify only channelization and traffic signals.

Some of the other main areas of planning activities are development of Departmental master plans, formulation of construction programs, preliminary location of new route alignments or corridors, urban planning and matters involving the impact of projects on the environment.

DESIGN

The engineering-design group develops and refines highway alignments, produces final construction drawings for highways and bridges, and provides comprehensive subsurface data as bases for all work. It also designs road drainage systems and waterway openings and plans relocation of utilities. In addition, it processes plans, specifications and estimates for construction contracts.

PURCHASE OF LAND

Right of way activities include supervising property appraisals, establishing fair market values, title searches, title closings and negotiating sale agreements. The Right-of-Way Division also finds replacement housing for persons or businesses displaced, and provides aid for moving costs. It sells buildings acquired with land taken for right of way, as well as land declared excess, and rents many properties through the Property Management Bureau.

QUALITY CONTROL

This area of work includes the quality control of all materials coming directly to the Department and also those delivered to the con-

struction site or the maintenance location.

Many materials are quality-controlled at the source through inspection at the supplying plants by Departmental personnel. Tests are performed in the Department's laboratory on all construction and maintenance materials. Field inspections and testing are made of bituminous and portland cement concrete and soil aggregates.

CONSTRUCTION

The construction function of highway operations is as old as the Department itself. For more than five decades, the Department has administered construction and improvement programs that have increased steadily in size to more than \$300 million for fiscal 1972.

These programs have included widenings, center barriers, intersection improvements, jughandles, overpasses, creeper lanes, dualizations, and resurfacing, besides entire new highways.

MAINTENANCE

The maintenance function of the Department is to keep the State Highway System in generally good condition. This means that continual inspection and repair of highways and bridges are made; storm drains are kept functioning properly; pavements are cleared of snow and ice; litter is removed and grass and landscaped areas kept neat; movable bridges are kept in operating condition; traffic signals are kept performing properly; approved signs are provided, renewed and replaced; reflective lines are renewed periodically; and many other responsibilities for preventive maintenance and repair are carried out.

AID TO LOCAL GOVERNMENTS

State monetary aid by the Department to counties and municipalities has been in effect since 1947. The funds are distributed mainly under legislated formulas reflecting area, road mileage and population each calendar year. They are used for such varied purposes as construction, reconstruction, maintenance and repair, lighting and policing of roads and bridges. Limited amounts also may be applied for debt service on road and bridge bonds.

State aid averaged about \$17 million per year from 1957 through 1966. For 1967 only, the Legislature supplemented through a new State sales tax the annual State Aid appropriation with special grants of \$20 million to counties and \$14 million to municipalities, for an overall total of \$51 million.

The great increase in traffic volumes led the Department in 1967 to reexamine the State Aid program. Department officials felt that State Aid funds should be applied toward further development of the secondary network which augments the State Highway System. Under the existing State Aid program, about 70 percent of the funds were being spent for such items as maintenance materials and payroll costs and did not serve to improve the overall state road network. In effect, these funds were serving mainly as local tax relief.

The Department obtained legislative cooperation through the enactment of a 1967 law to spur construction of additional local feeder and arterial roads needed to connect with the State Highway System. The new act established a State Aid Road System selected from many county and some municipal roads. This comprehensive and integrated network is being improved according to State specifications. Counties are required to match the State's contribution for each project; municipalities provide 25 percent. All State Aid Road System funds are limited to construction, reconstruction or betterment. For 1970, as in previous years, these totaled \$15 million.

Of the 2,219 miles of federal-aid secondary roads in New Jersey up to July, 1971, over 90 per cent were under county jurisdiction. This system is financed 50 per cent from federal funds which amount to about \$2 million a year. Matching funds are provided by the State or counties, with the major share coming from the counties.

In its function of supplying local government aid, the Department is both distributor and watchdog of State funds and supervisor of the work. Supervision includes inspecting construction, advising in the preparation of plans and specifications, reviewing these, and acting as final authority in awarding contracts.

SYSTEM MILEAGES

By mid-1971, the State Highway System totaled 2,951 miles. It contained 1,072 miles of 2-lane highways, 21 miles with 3 lanes, 719 miles with 4 lanes, 153 miles with 6 lanes, and 45 miles of others with up to 11 lanes. Also, by mid-1971, there were approximately 6,757 miles of county roads and 21,896 miles of municipal roads. Toll and other roads totaled 373 miles, including the Palisades Interstate Parkway; besides 486 miles for state parks and institutions.

TRAFFIC VOLUMES

In 1970, the State Highway System carried about 45 percent of New Jersey traffic, an average of 17,300 cars per mile both ways each 24-hour day, or about 12.8 billion vehicle miles a year. This is 5 times the national average, 3 times Pennsylvania's and also 3 times New York's state highway average volume.

Motor vehicle registrations in New Jersey increased from 765,000 in 1928 to about 3.8 million in 1970. Today there is one motor vehicle in the State for every two persons. In a number of counties, the ratio is already more than one car for every two persons.

SAFETY OF TRAVEL

The Department's concern with travel safety involves virtually every aspect of operations. Activities include accident identification and surveillance of accident locations by the Division of Research and Development; pedestrian safety and traffic engineering services, including signs, markers and signals, by the Bureau of Traffic Engineering; debris, hazard control and cleanup by the Bureau of Maintenance, and the various safety considerations which are responsibilities of the Bureau of Operations Safety.

THE INTERSTATE SYSTEM

Since 1956, a major portion of highway planning and construction in New Jersey, from a monetary viewpoint, has been devoted to bringing to reality over 415 miles of the newest and most modern freeways that will comprise New Jersey's part of the 42,500-mile National System of Interstate and Defense Highways. Ninety percent of this huge system is being financed by the Federal Government from Highway Trust Fund monies dedicated to that single national purpose and administered through the U.S. Department of Transportation.

With about half of New Jersey's portion of the system open to traffic, emphasis in construction of the remainder is on completing continuous segments in the most needed areas.



Interstate Freeway

VII. ACTIVITIES EXPANDED

The Department has demonstrated from the technical and production standpoints that it can meet the State's transportation needs if given adequate tools--money and personnel. Mainly through increased Federal Aid funds since 1956 and the start of the Interstate System, it has been able to expand its annual highway construction programs.

Prior to 1955, the State Highway Department's average annual construction program totaled \$25 million. From 1955 to 1969, programs averaged \$140 million a year. The Transportation Bond Issue, approved in November, 1968, helped further to boost the highway construction program.

1968 BOND ISSUE

Under the mandate of the Transportation Act of 1966, the Department in March, 1968, published "A Master Plan for Transportation" which indicated that overall construction needs totaled approximately \$3 billion during the next 20 years, similar to the forecast made in 1956 for 1975. For highways, this meant about \$2.75 billion would be needed in the two decades, while some \$375 million would be required for public transportation in a 10-year period.

On the basis of an evaluation of the most critical needs, the Department concluded that \$1.2 billion was required to carry out the essential improvements. A bond issue of that size was proposed to the Governor and State Legislature -- \$1 billion for highway purposes and \$200 million for mass transportation. The Governor's Commission to Evaluate the Capital Needs of New Jersey, a committee of prominent citizens, recommended \$800 million in transportation bond funds -- including the full \$200 million for public transportation -- be provided to carry out the first half of the improvement program.

The Legislature reduced the highway portion to \$440 million but left intact the requested \$200 million for public transportation. The total \$640 million bond issue proposed by the Legislature was approved by public referendum in November, 1968.

These bonds do not relate to the State's separate toll-road authorities which issue revenue bonds to construct and operate toll facilities.

NEW JERSEY TURNPIKE AUTHORITY

Work on the highway which was to become the 132-mile New Jersey Turnpike was initiated in 1947 by the State Highway Department as

Route 100 in Woodbridge and Carteret. The grading work that had been accomplished was taken over by the Turnpike Authority which was created by the Legislature in 1948. The Turnpike was opened to traffic from the Delaware Memorial Bridge to Route 46 in Ridgefield Park, not far from the George Washington Bridge, in January 1952. A 7-mile spur, from the vicinity of Newark Airport, to the Holland Tunnel, was completed in 1956. A 6-mile spur connecting the Turnpike from near Bordentown to Florence and the Pennsylvania Turnpike was also opened in 1956. Total cost of the main route and its spurs was \$446 million, covered by bond issues. Passenger-car tolls average 2.1 cents a mile and trucks 5.6 cents a mile.

NEW JERSEY HIGHWAY AUTHORITY

In April, 1952, the Legislature created the New Jersey Highway Authority to issue bonds and complete the proposed 164-mile Route 4 Parkway that had been started by the State Highway Department in 1947. Due to limited appropriations, the Department had completed only 19 miles before this Authority carried on.

The entire length of the originally planned main route, from Paramus to Cape May, was opened as the Garden State Parkway in July, 1955. A 9-mile extension from Paramus to the New York Thruway, near Suffern, New York was opened in July, 1957. Total cost of the route was \$330 million. Passenger-car tolls average about 1.6 cents a mile for the overall 173-mile length of the Parkway. For the southern 97



New Jersey Turnpike Separates Cars, Trucks

miles upon which trucks are allowed, the average charge per mile ranges from almost 1.3 cents for lightest trucks to about 5.2 cents for heaviest trucks.

The two foregoing Authorities each consist of five members appointed by the Governor with the advice and consent of the Senate to serve specific terms.

NEW JERSEY EXPRESSWAY AUTHORITY

A third roadbuilding authority was created February 19, 1962, when State legislation established the New Jersey Expressway Authority to construct the Atlantic City Expressway. The five Authority members serve five-year terms upon appointment by the Governor with the advice and consent of the Senate.

The legislation authorized construction of the Atlantic City Expressway from the southern terminus of Route 42 in Camden County southeasterly to Atlantic City, with a spur to Cape May to be added if and when deemed necessary. The major portion of the Expressway from Route 42 to the Garden State Parkway, a distance of 37 miles, was opened in 1964. The final 7-mile portion into Atlantic City was opened in 1965. Tolls approximate 2.8 cents a mile for passenger cars and 5.6 cents for two-axle buses and trucks.

The Transportation Department Commissioner, or his representative, serves as the Governor's liaison and advisor and acts as coordinator of the foregoing Authorities.



Garden State Parkway

PORT OF NEW YORK AUTHORITY

The States of New Jersey and New York in 1834 entered into an agreement determining and fixing the rights and obligations of the two States in and about the waters between the two States especially New York Bay and the Hudson River.

In 1921, the two States amended that agreement by creating the Port of New York District, which includes nine counties in Northern New Jersey, and the Port of New York Authority to operate within the District. The Authority may undertake only those projects which have been authorized by both States; it has no taxing power and may not pledge the credit of either State. The Authority must raise funds for capital projects by borrowing money on its own credit and on the basis of revenue from the use of its facilities.

The Port Authority consists of 12 Commissioners. Six are appointed by the Governor of each State, subject to confirmation by the State Senates. The Commissioners serve without compensation for overlapping terms of six years.

Projects and activities of the Authority are in the fields of land, air and water transportation and world trade. Facilities include: the George Washington, Goethals and Bayonne Bridges and Outerbridge Crossing; the Holland and Lincoln Tunnels; Midtown and George Washington Bridge Bus Terminals; Port Authority Trans-Hudson (PATH)



Containerized Shipping, Port Elizabeth

rail transit system; John F. Kennedy International, LaGuardia, Newark and Teterboro Airports; West 30th Street and Downtown Heliports in Manhattan; Newark, Elizabeth, Hoboken, Brooklyn and Erie Basin Marine Terminals, Port Authority Grain Terminal and Columbia Street Pier, New York; Port Authority Buildings; New York and Newark Union Motor Truck Terminal; and the World Trade Center.

DELAWARE RIVER PORT AUTHORITY

Under a compact between New Jersey and the Commonwealth of Pennsylvania, the Delaware River Port Authority was created in 1931 as the Delaware River Joint Commission. The compact has been amended twice to keep pace with broadening responsibilities placed upon it by the two States.

The Authority is empowered to build and operate bridges and tunnels, to engage in projects for the improvement and development of the port, and to build and operate a rapid transit system within a 35-mile radius of Camden in New Jersey and to points within Philadelphia.

Sixteen Commissioners comprise the Authority. All eight New Jersey Commissioners are appointed by the Governor with the advice and consent of the Senate. Six of the Pennsylvania Commissioners are appointed by the Governor with the advice and consent of the Senate. The other two, the Auditor General and State Treasurer, are ex-officio members. All serve without compensation for five-year terms.

Under the jurisdiction of the Authority, which covers eight New Jersey counties, are the Philadelphia-Camden Port facilities, the Benjamin Franklin and Walt Whitman Bridges, the Lindenwold High Speed Line, and two bridges currently under construction to link Bridgeport, N.J. with Chester, Pa., and Delair, N.J., with Bridesburg, Pa.

DELAWARE RIVER AND BAY AUTHORITY

The Delaware River and Bay Authority was created in January, 1962, by New Jersey and Delaware to plan, finance, construct and operate crossings between the two States across the Delaware River and Bay and transportation or terminal facilities which in the judgment of the States are required for the economic development of the five southern counties of New Jersey and all of Delaware.

Each State Governor appoints five members with the advice and consent of the respective Legislatures. They serve without compensation for terms of five years.

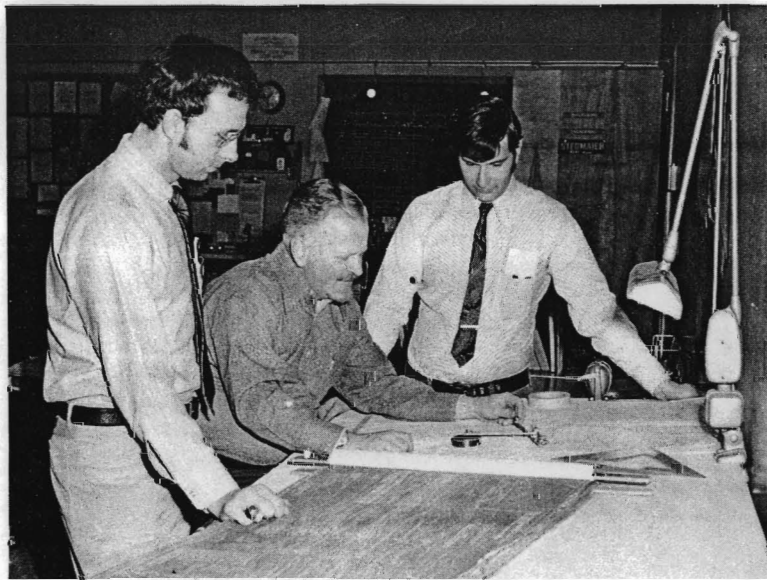
The Authority's facilities are the twin spans of the Delaware Memorial Bridge across the river between Pennsville, N.J., and New Castle, Del., and a ferry service across the bay between North Cape May, N.J., and Lewes, Del.

VIII. PREPARING FOR THE FUTURE

In mid-1971, the Department acted to provide greater efficiency in management and operations with a substantial reorganization along functional lines. The Department was restructured to integrate the traditional divisions, which, in effect, had been oriented basically toward a highway program.

New divisions and bureaus were developed on the basis of the managerial and operating functions required to be performed. They took into consideration recommendations of the Governor's Management Commission to strengthen the Department's ability to carry out its responsibilities in the areas of public transportation and aeronautics as well as highways.

The new organization streamlined internal communications through the consolidation of supervisory responsibilities. The former operating and administrative areas of Highways, Public Transportation, Planning and Administration were supplanted by Transportation Planning and Research, Engineering and Operations, Fiscal Management, and Employee and Management Services. To further strengthen internal management, the Assistant Commissioner for Highways also was appointed Executive Director of the Department.



Measuring Irregular Area for Drainage



Modern Computers Speed Engineering

IMPROVEMENT AND EXPANSION

Looking ahead, New Jersey will have to improve and expand its present transportation facilities beyond even some current advanced thinking. Forecasts of increases in population, motor-vehicle registrations, and miles of travel, for instance, predict with reasonable accuracy some of the major factors that must be dealt with and provided for in the future to help assure adequate transportation in the state.

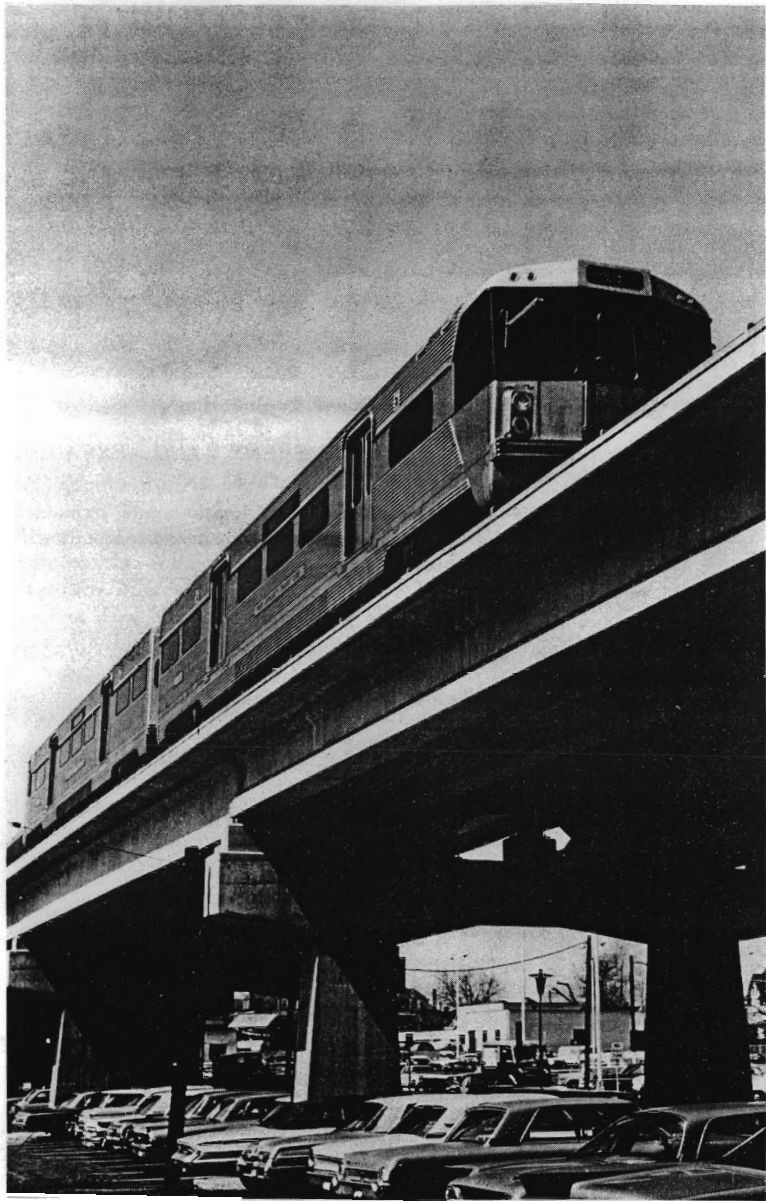
The population of the State in 1970 was approximately 7.1 million. It has been forecast to reach 10.3 million in 1990 - a rate of growth greater than either of the neighboring states of Pennsylvania or New York.

Moreover, the 1970 census showed that New Jersey has reached an average density of 953 persons per square mile to surpass the 905-person per square mile density of Rhode Island, formerly the Nation's most densely populated State.

It has been forecast conservatively that motor vehicle registrations will increase from 3.79 million in 1970 to 5.7 million by 1990 and that vehicular travel in New Jersey will increase from 39.9 billion to around 68.5 billion vehicle-miles per year.

Such forecasting is part of the work of the Transportation Department in developing its Master Plans. These factors, together with labor, industry and other trends throughout the State, are considered in evaluating transportation needs.

Together with many other demonstrated needs in highways, public transportation and aviation, they led the Department of Transportation in 1971 to begin the preparation of a new Master Plan, a plan to re-order transportation priorities to reflect today's concerns of the citizens of New Jersey.



Lindenwold Line, High Speed Transit

WERT
BOOKBINDING
MIDDLETOWN, PA.
MAR. '73
We're Quality Bound