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# PROGRESS REPORT

1954 - 1962

NEW JERSEY STATE HIGHWAY DEPARTMENT

New Jersey State Library



## New Jersey State Highway Department

### Progress Report 1954-1962

During the eight years since 1954, the production and other activities of the New Jersey State Highway Department have increased and diversified to a degree unmatched by a comparable period in its history. To handle these many additional responsibilities, it has been necessary for the management of the Department to institute some rather sweeping changes in every phase of the Department's operations. Much remains to be done and always will, however, the accomplishments to date provide a solid base upon which to build for the future. The demands of our State's expanding economy can be met in no other way.

#### THE RECORD

##### Highway Construction

1. The amount of money committed to new highway projects has risen steadily each year, reaching an all-time high of \$115 million in 1961-62. This compares with approximately \$35 million activated during the 1953-54 fiscal year.
2. As of June, 1962, more than 87 miles of highway projects were under construction with an original contract value of more than \$116 million. Total outstanding obligations, including engineering, purchase of right-of-way, and public utility rearrangements amounted to more than \$155 million as compared with a figure of approximately \$36 million for June 1954.

Highway Construction, cont'd.

3. Since the end of 1953, the Department has completed more than 700 miles of contract construction projects of all kinds, which included some work, of course, necessary to improve a highway's safety in one way or another without adding to its capacity.

Highway Engineering

1. In designing the modern highways required by today's traffic volumes, the Department abandoned the outmoded concept of "traffic circles" in favor of Channelized Intersections, Jughandle Turns and Overpasses. The construction of these complex interchanges is a major cost item, particularly in urban areas, but in no other way can dangerous turning movements be avoided.
2. Due to improved construction methods and materials, it was found possible to reduce the thickness of rigid pavements without sacrificing strength. This has helped hold construction costs down.
3. Flexible pavements, employing bituminous concrete, have been designed to conform with the geologic sub-surface soil characteristics of many areas in the State. Use of a stronger and more durable base for such pavements has made it possible to utilize them, at less cost, on more highways than in the past.

Highway Engineering, cont'd.

4. The standard lane width has been increased, shoulders have been widened and hard-surfaced, grades and curves have been eased and adequate lighting introduced at intersections and other hazardous points.
5. The Department developed the concept of low-level bridge lighting and installed its and the world's first such system on the Manahawkin Bridge with conspicuous success. This innovation is now being carried out by other Highway Departments.

Maintenance

1. A statewide two-way radio network was set up to improve efficiency and "increase" the work force of maintenance, electrical and equipment activities.

There are eight base transmitting and receiving stations and 254 mobile units. Mobile installations include maintenance foremen and supervisors' cars, electrical maintenance trucks, equipment and road mechanics' cars and radio maintenance vehicles.

2. Encroachments on State Highway rights-of-way had become a tremendous problem over the years, with the number reaching 10,000 or more. Better than 4,000 have now been removed under a program of continual policing.

Maintenance, cont'd.

3. Winter Driving - The Department has placed special emphasis on snow and ice control. Each year has seen vast improvements in both operational methods and equipment. The total snow fighting force consists of approximately 2,000 pieces of equipment and 2,500 men fortified by the radio network. This enables the forces to be shifted on a moment's notice. In 1958-59 the Department used rock salt on a state-wide basis for the first time in the control of icy pavements. This materially improves the effectiveness of "Operation Snow" and reduces the annual springtime cost of cleaning abrasives from our roadways. By converting existing equipment from cinder spreading to salt spreading, purchases of special equipment amounting to many thousands of dollars were avoided. In 1960-61, the Department conducted seminars on snow removal problems throughout the State, resulting in improved local action in keeping streets and highways open during storms.

Signs

1. The thousands of signs along New Jersey's highways were revised through comprehensive and continuous review under both day and night conditions. This has provided greater service to motorists through simpler legends, fewer names and larger signs. Compass directions were placed on route markers to enable motorists to identify travel direction.

Signs, cont'd.

A sign research program was established and a continuing state-wide sign cleaning procedure instituted. More legible and distinctive route markers for State and Federal routes were developed. White reflecting letters on green background became standard. "No Litter" signs were erected on a state-wide basis with noticeable lessening of the amount of litter maintenance people had to pick up. Both improved appearance and safety were some of the dividends.

2. In order to determine the most efficient type of roadside delineators, top staff members made extensive night tests on the many highways throughout the State. These tests made possible for the first time direct comparisons between many types of reflectors.
3. In the interest of greater safety at night, the policy of making all signs on state highways either reflecting or illuminated was established.
4. Large (six-foot double-faced) SPEED LIMIT signs were placed at five mile intervals on divided highways to replace smaller signs previously placed at one-mile or less intervals. This produced a saving by making one sign do the work of ten or more smaller ones.

Enforcement authorities, including the State Police, have been enthusiastic in their praise of the larger and simpler signing.

Signs, cont'd.

5. A "Welcome to New Jersey" sign featuring an accurate replica of the Great Seal of the State of New Jersey was designed and placed at all interstate crossings.
6. Overhead remote-controlled signs were developed and installed at appropriate locations to warn motorists of traffic signals ahead of time.
7. The development of directional signs at multi-lane interchanges included construction of a 178-foot bridge on Interstate Route 295 near Camden, at the time the largest in the nation.

Planning

The Department developed a Master Plan for future construction based on estimated traffic requirements in 1975. It included additions to and improvements of the present state system at a total estimated cost of \$2 3/4 to 3 billion dollars in construction deemed necessary to the continued growth of our State.

This plan was reviewed by the Commissioner and members of his staff with Legislators, Freeholders, Planning Boards and local officials in a series of meetings in each of the 21 counties. The purpose of these visits was to permit coordination by others with the overall planning of the Department marking the first time such local conferences were undertaken on a state-wide scale.

### Safety Construction

Accidents have been reduced and lives saved by the introduction of many improvements in design of both new and old highways. Chief among these features are the following:

1. Barrier curbs to eliminate head-on collisions - 118 miles constructed since 1954.
2. Creeper lanes for use by slow-moving vehicles on long steep grades - 35 built since 1954.
3. Jughandles for left turns - 285 units in the same period.
4. Stabilized and widened shoulders to provide safe off-the-road stops and reduce maintenance costs by eliminating periodic scraping.
5. Bordering white reflecting lines have been painted on the outer edges of all state highways to delineate the pavement edge at night. New Jersey was the first state to adopt and complete this program.
6. Wire mesh fencing installed on overpasses to prevent children from climbing on balustrades.
7. Constructed 285 overpasses to eliminate grade intersections for pedestrian and vehicular travel.

Safety Construction, cont'd.

8. Established a continuing program for closing center island openings to reduce accidents caused by the "overhang" of vehicles.
9. Curves on all new highways being super-elevated (banked) for greater safety.

Administration

1. Standard Operating Procedures to insure uniform interpretation of all Departmental operations have been established and maintained.
2. Rigid controls governing use and operation of Department-owned vehicles have been put into effect. As a result, the private use of state cars was eliminated and through more efficient assignment the passenger car fleet was reduced from 352 to 278. Sixty excess cars were sold and 12 others assigned to other State Departments. Operating expenses of the fleet were reduced by \$4,000 a month.
3. The jungle of forms used by the Department (the outgrowth of 35 years) was reviewed and revised. Many were eliminated and some new ones created which materially reduced interoffice correspondence.

Administration, cont'd.

4. The former practice of retaining 10% of the bid price of a job until final approval of the completed project was changed to retention of 10% through the first half of the job and no retention thereafter. This ties up less of the contractor's working capital with the State adequately protected.
5. To meet the demand for experienced contractors, the Department revised tests and pre-qualification ratings, placing greater emphasis upon past performance. By up-grading this element of "pre-qualification" the Department was able to cash in not only on a contractor's ability and character performance, but his adherence to meeting a contract schedule.
6. Perpetual inventories were established and stock orders placed on a quarterly rather than yearly basis, reducing required storage space and the amount of money tied up in materials.
7. Progress boards were developed to replace written reports from construction and real estate divisions. Photos of these boards are sent to the staff at 2-week intervals. Information relative to construction progress is thereby placed at their disposal on one sheet rather than with volumes. In addition to main control boards in administration headquarters, specialized boards are used in the road, bridge, planning, real estate, legal and personnel divisions.

Administration, cont'd.

8. Uniform observance of hours for beginning and ending the working day was obtained by sounding a gong signal. This practice has done away with people using their own determination of the working day. In addition, cafeteria hours were set at 8 a.m. to 8:45 a.m. and 11:30 a.m. to 1:45 p.m. to discourage continuous "coffee breaks".
9. In the interest of efficient conservation of storage space, a procedure was set up for the disposal of useless and obsolete records in conformity with state regulations. In a single month seven tons of such records were disposed of and the space released utilized to overcome office crowding. This also reduced the need for purchase of new storage cabinets.
10. Organization charts of the Department showing the responsibility and necessary personnel of all divisions, bureaus, and sections of the Department were edited and brought up to date in line with new and added functions.
11. Regular staff meetings were instituted and this procedure encouraged throughout the Department.
12. Investigation and the preferring of charges against dishonest employees was placed on a basis of constant vigilance by a trained staff with the result that quite a number have been separated from their jobs.

Administration, cont'd.

13. All State Highway cars were painted a bright yellow to make them conspicuous and discourage their use for personal jaunts.
14. Construction and materials specifications were revised for the first time since 1941. All suppliers were sent drafts of portions of interest to them for their consent and review.
15. Accounting procedures were mechanized, particularly with reference to Federal Aid construction projects, and New Jersey became the first State on the eastern seaboard and the fourth in the Nation to satisfy the Federal Government's requirements for "concurrent audit" involving much faster reimbursement for construction expenditures. A firm of national repute was engaged to review all phases of our accounting and record keeping.

Fernwood Equipment Depot

1. The Fernwood Plant was expanded and reorganized to obtain more effective layout and efficient operation. New buildings were constructed here and at outlying locations. Reassignment of space resulted in less crowding and storing of more equipment under cover.
2. Plant security was increased through additional yard lighting; continuous watch service signaling system for fires; new fencing and restriction of certain areas. This reduced insurance costs materially.

Fernwood Equipment Depot, cont'd.

3. An accumulation of junk dating back to 1918 was sold and rigid procedures established in the disposal and classification of scrap.
4. A survey was conducted to remove obsolete materials and parts, some of which had been in storage since World War I. Following an inventory, they were offered for sale under competitive bids. Unsold material was scrapped. This procedure was extended to include parts stocked in field depots and in the Electrical Bureau.

Personnel

1. A Departmental dispensary and two first-aid rooms for use by employees was set up in the Trenton headquarters -- the first in the State.

An average of 300 persons a month receive treatments for ailments ranging from minor indispositions to major accidents. Prior to the establishment of the dispensary under the full time supervision of a registered nurse, these people had to go elsewhere for treatments with the result that absence from work was common. Such absence was further curtailed by addition of a visiting nurse to the staff.

2. A "tapering-off" retirement policy was started under which administration of various bureaus and divisions is gradually turned over to assistants over a two-year period and assistants are elevated to the position of acting chief. Retirement at 70 years of age was made mandatory.

Personnel, cont'd.

3. A broad training program for new employees and others to better qualify them for their present jobs and future advancement was set up. This includes the training of many engineers from foreign countries sent us each year by the U.S. State Department.
4. The practice of employees receiving gifts and entertainment from purveyors of services and supplies was completely abolished. All persons doing business with the Department and all employees are reminded of this each year at the holiday season.
5. All references to race and color on Personnel Forms were eliminated and non-discriminatory employment practice established.
6. The use of free State railroad passes by Highway Department personnel was terminated.
7. In 1954 a recruitment program was instituted. Under this program, first in State Government, representatives of the Department visited the campuses of leading colleges and universities to interest engineering graduates in careers in the Highway Department. This program, carried on in direct competition with private industry, has been unusually successful and has placed in state service many qualified young men.

Personnel, cont'd.

8. Office Christmas Parties were abolished because of the unfavorable reactions on the part of many of the families of our people and the general public. In their stead, the Commissioner has given a Children's Christmas Party and gifts for some hundreds of children and grandchildren of the Department each year.
  
9. There has been progressive improvement in bettering the wage scales of our three grades of hourly employees: Laborers, Semi-skilled and Skilled workers.

At the outset of this administration the laborer had a \$1.26 minimum hourly wage. It required five years of service, receiving one 6¢ increment each year, to reach a \$1.56 maximum hourly wage. The same type of employee now enters with a \$1.72 minimum hourly wage and four years later reaches his maximum of \$2.08. This is about a 30 per cent increase at each end.

The Semi-skilled range has been boosted from a \$1.32 minimum and \$1.62 maximum to a \$1.82 minimum and a \$2.09 maximum in four years. This is about a 40 per cent increase in the minimum and a 25 per cent increase in the maximum.

Skilled employees can now, in four years instead of five, go from their present \$2.10 minimum to a \$2.69 maximum. In 1954 the starting pay in the same category was \$1.74 and the worker could only aspire to a \$2.04 maximum. This is better than 20 per cent more at the minimum and about 30 per cent at the maximum.

Right-of-Way

1. On Interstate construction, a policy of using Title Companies to clear titles, rather than enlarge the Department's own Title Bureau was established. By using these specialists the property owner can get a much quicker settlement than would otherwise be the case -- frequently within a week.
2. The practice of holding meetings in various municipalities to explain the Department's policy and procedures in the acquisition of rights-of-way was instituted. At these meetings property owners are provided with answers to practically all of their questions.
3. Under a new plan, the financial stress of property owners forced to relocate their homes has been eased. A property owner is now paid 25% of the purchase price upon signing an agreement of sale providing that amount does not exceed 75% of his equity. By this means, a property owner is provided cash to aid him in acquiring a new home or place of business.
4. A regular routine has been set up for disposing of 35 years' accumulation of excess of land adjoining highway rights-of-way which are not needed for highway purposes and putting them back on the public tax rolls. Public auctions are also held regularly to dispose of buildings acquired on new right-of-way. The Division's operations have had reviews by professionals as well as by the Bureau of Public Roads. New procedures, checkmates and forms have been adopted. The Right-of-Way Division reports direct to the Commissioner.

Safety

1. The Department's safety program was expanded to include inspection of construction projects to safeguard the motoring public. It includes advance warning signs, barricades, lights, uniformed traffic directors and similar safeguards.

Research

In cooperation with leading manufacturers and national scientific and technical organizations, the Department has expanded its development and testing of new materials and devices. Examples include:

1. An experimental installation on Routes U.S. 1 & 9 to test use of electric cables buried in the pavement as a means of controlling ice and snow.
2. A program of controlled testing of a new device to measure the night illumination of traffic line paint.
3. Use of wire loops buried in the pavement to control and count traffic.
4. Use of nuclear measuring devices to calculate the density of soils and other sub-surface materials.
5. Use of specially designed metal mesh to prevent headlight glare.
6. Use of plastic strips in place of traffic line paint.

Semi-Autonomous Agencies

The Commissioner was designated as the Governor's liaison with all State and Interstate Authorities active in the field of transportation, including the Port of New York Authority, the New Jersey Turnpike Authority, the New Jersey Highway Authority, the Delaware River Joint Toll Bridge Commission, the Delaware River Port Authority, and the Palisades Interstate Parkway. In addition, the Commissioner has personally represented New Jersey as a Member of the Delaware River Joint Toll Bridge Commission, the New York-New Jersey Transportation Agency, and the Tri-State Transportation Committee. As a result, many new programs of benefit to the citizens of the entire area have been put into effect:

1. Delaware River Joint Toll Bridge Commission. The Commissioner was appointed a member of this Agency in 1955 and promptly instituted an investigation which uncovered evidence of widespread irregularities in the conduct of the Commission's affairs. These were corrected and the operations of the Commission re-organized, with the result that budgets were reduced, bond retirements were accelerated, service to motorists improved, and many capital improvements made possible. Money improperly paid to some officials was recovered.
2. Delaware River Port Authority. In the wake of great controversy over the design and location of a rapid transit line from Philadelphia to Kirkwood, the Commissioner negotiated with the Authority and local officials and secured agreement to a modification which makes it possible to greatly improve some of Camden's problems.

Semi-Autonomous Agencies, cont'd.

3. New Jersey Highway Authority. After long negotiations with the Authority, bankers, investment firms and engineering consultants, the Commissioner prepared and ultimately secured legislative approval of a \$40 million Parkway bond issue which is being used to finance construction of the Essex East-West Freeway (Interstate Route 280) as a depressed route through Newark and the Oranges, construction of an interchange with the Garden State Parkway in East Orange, and improvements to the Parkway in Essex County. This will improve the overall financial situation of the Parkway and provide some \$13 million toward construction of a free highway.

The Commissioner, again acting as the Governor's agent, developed a solution to location of a new interchange in Monmouth County.

4. The New Jersey Turnpike Authority. The Commissioner has provided liaison, in several areas including that of real estate acquisition and the location of new interchanges, between the Turnpike and other agencies such as the State Division of Motor Vehicles, the Hudson County Produce Market, Newark Airport, the Lincoln Tunnel and the Goethals Bridge (all controlled by the Port of New York Authority), and many communities.
5. Port of New York Authority. When plans for double-decking the George Washington Bridge were unveiled an agreement was obtained under which the Authority is paying \$25 million toward the cost

Semi-Autonomous Agencies, cont'd.

5. of the Bergen-Passaic Expressway leading to the bridge.

It is understood that any surplus will be used on other Bergen County highways feeding the bridge. By using all of these Port Authority funds to match Federal Aid, the State is obtaining more than \$100 million in road construction at no expense to the State Treasury.

In 1961 the Highway Department conducted two independent studies leading to a determination by the Governor that jet airplane service on a limited basis could be instituted at Newark Airport and emphasizing the value of an expanded and completely modernized airport to the city of Newark and the surrounding area.

6. After many negotiations with officials of the State of Delaware, the Commissioner secured an agreement under which the Delaware Memorial Bridge will be operated jointly by both States, instead of Delaware alone, in conjunction with new bridges, tunnels or ferries. A new Delaware River Bay Authority was set up to represent both States.

Semi-Autonomous Agencies, cont'd.

7. At the request of local officials, particularly those representing Atlantic City, exhaustive studies were undertaken to determine the feasibility of a toll road from a point south of Camden to the shore. As a result, legislation was adopted setting up the Atlantic City Expressway Authority to build and operate a toll road according to the route and design developed by the Highway Department.

General

1. The Commissioner acted as Flood Coordinator during the devastating Delaware River floods of August 1955. In this capacity he coordinated the emergency relief work of all public agencies, both State and Federal.
2. As the Governor's representative, the Commissioner negotiated with the owners of the Chester-Bridgeport Ferry across the Delaware River with the result that under new legislation, recommended by the Department, this service continued in operation under a subsidy from the States of New Jersey and Pennsylvania.
3. Under special legislation, the Department was able to prevent complete demolition of the historic Green Sergeants Bridge near Sergeantsville and a completely restored structure was opened to traffic in September 1961.

General, cont'd.

4. In the wake of the March 6-8 storm along the Atlantic seacoast, the Department moved approximately 500 men and more than 350 pieces of equipment into action to aid distressed communities. The effort continued until all local streets were cleared of debris and sand, which was completed well in advance of the summer vacation season.
5. A special Disaster Survey of Sea Isle City, listing the damage to that community and outlining a proposed protective "buffer strip", was presented to the Governor five days after he requested the information. The Department later appraised property which would be required for or rendered worthless by a new sand dune under construction by the U.S. Army Engineers and negotiated for these properties on behalf of the communities concerned. In all, some 800 parcels were involved.
6. As part of the overall shore rehabilitation work, the Department prepared another special report to the Governor on the possible use of sunken surplus ships for breakwaters and jetties.
7. A continually revised series of colorful and informative "Official State Map and Guide" booklets was distributed throughout the eight year period. The new booklet format was reported as extremely convenient for motorists to use while driving. Demand far exceeded the supply of every issue.

Transit

1. In advance of the shutdown of the West Shore Division of the New York Central Railroad and the ferry which transported its passengers across the Hudson River into New York City and back, the Commissioner made suitable arrangements with bus lines serving the area so that when the shutdown occurred, no commuters were inconvenienced.
2. Upon creation of the Division of Railroad Transportation, the Commissioner negotiated contracts with all major commuter lines ensuring continuation of 96 per cent of the essential passenger service in the State. The cost of this program, amounting to between \$5 million and \$6 million a year, is less than the construction cost of one mile of modern freeway in an urban area. It has stimulated the carriers to help their own situation.
3. After prolonged negotiations, in which the Commissioner represented New Jersey, legislation was enacted directing the Port of New York Authority to acquire, rehabilitate and operate the Hudson & Manhattan Railroad in conjunction with construction of a World Trade Center on the west side of Manhattan, in the area of the present H & M terminal. Largely as a result of the Highway Department's insistence, this program includes provision for transfer stations in the Jersey Meadows to link up with New Jersey commuter railroads, a new bus terminal in Jersey City, and commits the Port Authority to spend up to an estimated \$10 million a year on mass transit, even as a deficit operation.

Transit, cont'd.

4. Similar negotiations with the Erie-Lackawanna Railroad, the City of Passaic and the State Public Utilities Commission resulted in agreement to remove the existing railroad tracks in the city, re-route the railroad, and utilize part of the railroad right-of-way for highway purposes. A major portion of the cost will be borne by the Public Utilities Commission.
  
5. A comprehensive study was completed of the moves required to revitalize mass transit in New Jersey and the cost. This program, in contrast to other schemes presented in past years, was based on economical use of existing facilities to allow the railroads to reduce operating costs insofar as possible and still improve service for the vast majority of passengers. The total cost to be paid by the Federal Government, the State and the carriers was estimated at \$127 million, which puts the program within practical reach.

Urban Planning Studies

1. Penn-Jersey. This study, undertaken in cooperation with the Pennsylvania State Highway Department and the U. S. Bureau of Public Roads, is designed to develop an adequate transportation system for a nine-county metropolitan region.

Urban Planning Studies, cont'd.

It covers Burlington, Camden, Gloucester and Mercer Counties in New Jersey and Bucks, Chester, Delaware, Montgomery and Philadelphia Counties in Pennsylvania. The basic data for the \$4 million study was to be collected and analyzed and a report issued in 1963. The information will then be kept current by continuing investigation in future years. Population and motor vehicle density maps were issued in 1962.

2. Newark. A full study of the transportation habits and facilities of the Newark metropolitan area was completed and a detailed report issued in 1961. Recommendations regarding rehabilitation of the area around the Pennsylvania Railroad Station were of particular interest.
3. Preparations for the Northeastern New Jersey Transportation Study were completed in 1962. It will cover Bergen, Essex, Hudson, Mercer, Middlesex, Monmouth, Passaic, Somerset and Union Counties.
4. Tri-State Transportation Committee. This group was formed by the Governors of Connecticut, New Jersey and New York in August 1961 to examine the transportation problems facing the Nation's largest urban complex. The Committee, on which New Jersey is represented by the State Highway Commissioner, was directed to take such immediate steps as were feasible as well as to

Urban Planning, cont'd.

make recommendations for long range action. Moves to date include recommendations for several "pilot projects" which would be partially financed with Federal Aid, including a "park and ride" facility on the main line of the Pennsylvania Railroad in the vicinity of New Brunswick. The Committee is making use of data collected by the Bi-State Transportation Agency on the problem of rail freight movements in New York Harbor and expects to derive much benefit from the North-eastern New Jersey Transportation Study.

Electronic Engineering

In order to conserve manpower and expedite progress of construction projects, several New Jersey Highway Department engineers were trained in the use of the latest electronic computers. Engineering problems were worked on a large computer available in the offices of the Treasury Department pending delivery of an IBM 1620 in the fall of 1962. A new Division was created within the Highway Department to staff this device and its supporting data processing machines and space was made available on the first floor of the Highway Department building in Trenton. This organization will service all of the construction needs of the Department, including the functions of Road Life Inventory and similar statistical reports prepared by the Bureau of Planning and Traffic. It will be particularly valuable in the computation of skewed

Electronic Engineering, cont'd.

bridges and cut and fill amounts. Calculations which would ordinarily require days or weeks will be performed in a few minutes.



