Annual Report of the Chief Engineer
State Highway Department
1940

Dover, Delaware
January 1, 1941

To the Chairman and Members
of the State Highway Department,
Dover, Delaware.

Sirs:

In accordance with the Statute, I am herein submitting a report of the activities of the Department for the calendar year ending December 31st, 1940, in which are included certain recommendations for the year 1941.

A brief report of each division of the Department follows:

DIVISION OF PLANS, SURVEYS, ESTIMATES AND FEDERAL AID

Before construction work can be begun, accurate and detailed surveys, plans and estimates must be prepared. During the year the Department issued seventeen advertisements for bids comprising thirty-nine (39) separate projects. These projects are classified as follows:

Roadway—21

Bridges—6

Surface Treatment and Maintenance Materials—7

Fuel and Lubricants—2

Mechanical Equipment—2

Laboratory Equipment—1

Sixteen (16) grade crossing protection projects were authorized for construction by the Public Roads Administration. By virtue of a Federal regulation governing this type of work, the State was relieved of advertising for and receiving bids on these projects.

Of the total projects placed under contract during the year, the Public Roads Administration is participating in thirty. Detailed programs, maps, plans, specifications, estimates, and other necessary documents were prepared for these projects and submitted to the Administration for approval.

Six hundred ninety (690) proposal forms were prepared for bidding purposes and Departmental use. One hundred ninety-two (192) bids were received.

Each bid received was checked item for item and tabulated.

Weekly payrolls on all active Federal Aid projects were checked and tabulated. Copies of all payrolls were forwarded to the proper Governmental bureaus.

One Hundred seventy-seven (177) periodical estimates were computed and checked on active projects for the year.

Fifty-seven (57) vouchers for reimbursement were submitted to the Public Roads Administration. Payment was received on forty-five (45) of the vouchers submitted this year. Reimbursement was received on fifteen vouchers which were submitted in the previous year.

SURVEYS

Miles	
75.0	Base Line
72.4	Topography
53.6	Cross Sections (Prel.)
45.3	Cross Sections (Final)
34	Borrow Pits (Prel.)
34	Borrow Pits (Final)

DRAUGHTING DIVISION

Miles	
75.0	Base Line Plotted
73.2	Topography Plotted
50.4	Profile Plotted
50.5	Index Maps Plotted and Traced
74.6	Plans Traced
53.6	Cross Sections Plotted (Orig.)
45.3	Cross Sections Plotted (Final)
41.3	Grade Laid
43.1	End Areas Planimetered and Computed (Prel.)
45.3	End Areas Planimetered and Computed (Final)
34	Borrow Pits Plotted and Computed

In addition to the above, there were 46 property drawings and miscellaneous charts prepared for this and other State Departments.

BRIDGE DIVISION

Two major bridges were completed during the year, the Charles W. Cullen Bridge at the Indian River Inlet and the Cranston Heights Viaduct. The first was opened to traffic on May 18th and the second on September 21st. Both of these structures were fully described in the 1939 report.

The most important pieces of bridge construction undertaken during the year were the bridge over the Lewes-Rehoboth Canal on the Dewey Beach Cutoff near Rehoboth and the Tulls Crossing Overpass at Seaford.

The Dewey Beach Bridge is a double leaf rolling lift bascule with two approach spans, a total length of 171 feet and a 28-foot roadway with a 4-foot sidewalk. A clear channel for boats of 50 feet is provided.

The electrical equipment is the most complete of any constructed by the Department. All operations are interlocked and every precaution has been taken to insure safety. Bids were opened on July 24th and the contract was awarded at a contract price of $151,690.00. It is expected to be completed in August, 1941.

Bids were received on June 12th, 1940, for the elimination of the grade crossing at Tulls Crossing in Seaford. The contract, which is to be completed in April, 1941, was awarded at the lowest bid price of $74,214.50.

The entire project is 1,295 feet in length and consists of 20 reinforced concrete spans and a steel I-beam span over the Delaware railroad. The roadway width is 30 feet with two 5-foot sidewalks.

During construction traffic is cared for by a macadam bypass road which will be used permanently to gain access to adjacent properties.

Plans are nearing completion for the bridge over Red Clay Creek, south of Stanton; the Curtis Mill Bridge at Newark; the Heald Street Overhead Bridge at Wilmington; and for High Street, Seaford. These structures are expected to be placed under contract in the early summer.

Designs for numerous other smaller bridges have been made in connection with highway contracts.

DIVISION OF TESTS

All materials submitted for use by the Department on State Highway contracts must meet the specifications and

requirements of the Department before being used. This necessitates a large number of routine and special tests, which are carried on by the Division of Tests.

During the year 5,463 samples were taken of various materials and tested. These samples represented the following quantities of materials furnished:

Coarse Aggregate (Stone)	147,232	tons
Coarse Aggregate (Gravel)	57,200	tons
Fine Aggregate (Sand)	75,125	tons
Portland Cement	303,000	bbls.
Central Mixed Concrete	18,443	cu. yds.
Conc. Pipe (all sizes)	33,679	lin. ft.
Creosoted Timber Piling	10,280	lin. ft.
Creosoted Timber & Lumber	257,052	bd. feet
Creosoted Guard Rail Posts	3,292	
Asphalt (Surface Treatment)	1,973,535	gals.
Amiesite (Top and Base)	22,084	tons
Sheet Asphalt (Top & Binder)	3,473	tons
Concrete Cores removed	444	
Concrete cylinders, broken	1,310	
Slag (Traffic bound)	28,125	tons
Creosote Oil	85,222	gals.
Oil (Motor Oil)	16,000	gals.
Naphtha (For amiesite)	10,000	gals.
Structural Steel	3,700,000	lbs.
Expansion Joints	18,651	lin. ft.
Gasoline	600,000	gals.

A study of the tabulation reveals that Portland cement concrete, creosoted timber bridge construction, and bituminous materials represent the bulk of the work undertaken by the Department.

New equipment added to the laboratory has enabled the division to extend its operations so that little assistance is now required of commercial laboratories.

In November the Laboratory was inspected by the National Bureau of Standards and was placed on the approved

list of cement testing laboratories of the Cement Reference Laboratory in Washington.

As has been the case each year since the organization of the Soils laboratory, the total number of samples tested has exceeded that of all previous years. Routine soil tests were performed on 1,471 samples. Seventy-eight field trips representing 155 man-days of work were necessary to obtain these samples, exclusive of the samples of concrete pavement sub-grades obtained by the crew of the core drill. In addition, 82 field trips representing 70 man-days of work were made by the laboratory personnel in a purely supervisory capacity. The supervisory and sampling trips together required approximately 12,000 miles of travel.

During the year 42 new borrow pits were sampled and tested; this work required the testing of 135 samples. The additional investigation of eleven old borrow pits as they have been enlarged required the testing of 48 samples.

Stabilization of the surfaces of 14 roads by the Department's forces, or under contract, required the testing of 177 samples. These included tests of admixtures made in the laboratory for 10 roads built by admixture type of construction.

Subgrade stabilization layers placed on seven contracts required the testing of 146 samples taken from the stabilization layers, from 5 pits, and from 4 commercial sources.

Other miscellaneous samples tested included 5 for one earth dam, 2 from a failure of the subgrade of a macadam road, and two from a concrete pavement subgrade.

One soil-cement and one bituminous stabilized road were built this year under contract. These two roads required an immense amount of testing and occupied the laboratory's time intermittently for a period of almost five months.

The soil cement road required the testing of 9 routine soil samples, 10 Proctor determinations, cement determina-

tions and durability tests on 24 specimens, 18 compression specimens, 17 road density and 17 compacted depth checks, plus an undetermined number of moisture samples tested for field control purposes.

The bituminous stabilized road required the molding of 102 specimens of which 86 were tested for both stability and absorption and 16 tested for absorption only. Five Proctor determinations, 16 road density determinations, 15 routine soil tests, and 61 depth checks were made in addition to an undetermined number of moisture tests.

CONSTRUCTION

During the past year, 1940, the Department held seventeen lettings and received bids on twenty-seven road and bridge projects, seven road material maintenance contracts, two road equipment contracts, one building equipment contract and two fuel and lubricant contracts. Proposals were received from 192 bidders on the above contracts—an average of over five per contract. The total contract low bids for the above projects awarded amounted to $1,637,349.17 or approximately $17,000 more than the low contract bids for the year 1939 which amounted to $1,620,398.63.

The classification of these projects and monies expended are as follows:

21	Roadway projects	$1,070,458.14
6	Bridge projects	256,736.00
7	Maintenance Materials	212,513.03
2	Machinery and Equipment	19,696.00
1	Building equipment	1,621.00
2	Fuel and lubricants	76,325.00
		$1,637,349.17

Roadway Projects

9	State	$ 90,529.22
12	Federal Aid	979,928.92

Bridge Projects

4	State	$ 30,832.00
2	Federal Aid	225,904.00

Federal Aid Share of Projects

	Roadway	$ 489,964.46
	Bridge	150,059.25
16	Railroad Crossing Projects	96,909.07

The types of the projects are divided as follows:

9 Cement concrete contracts
5 Bituminous concrete contracts
1 City street sheet asphalt contract
1 Soil cement stabilized road contract
1 Bituminous soil stabilized road contract
1 Traffic slag road contract
1 Gravel road approach contract
1 School driveway contract
6 Bridge contracts
1 Laboratory equipment contract
2 Furnishing and applying asphaltic material contract (Maintenance)
3 Furnishing and applying stone chips (Maintenance)
1 Bituminous concrete contract (Maintenance)
1 Bituminous joint filler contract (Maintenance)
1 Motor and Grease contract (Maintenance)
1 Gasoline contract (Maintenance)
1 Reinforced concrete pipe contract (Maintenance)
1 Motor grader contract (Maintenance)

The mileage and types of roadway contracts advertised during the year were as follows:

0.703 miles 42 to 59 feet sheet asphalt—new
11.707 miles 22-foot cement concrete—new
2.496 miles 20-foot cement concrete—new
0.114 miles 12-foot cement concrete shoulder—widening
0.341 miles 24-40 feet bituminous concrete—reconstruction

11.064 miles 22-foot bituminous concrete—reconstruction
0.33 miles 18-foot bituminous concrete—new
6.00 miles 20-foot bituminous concrete—reconstruction
0.11 miles 20-foot bituminous concrete—new
0.269 miles 20-foot gravel approach—new
4.861 miles 18-foot bituminous soil stabilization—new
2.905 miles 18-foot cement soil stabilization—new
0.284 miles 18-foot traffic slag—new

In addition to the above, there was carried into the 1940 construction from the previous year:

Contract 673—Lancaster Pike—3.925 miles of 22-foot concrete pavement

Contract 649A—Cranston Heights Viaduct and 200 feet of 2—24-foot concrete approaches

Contract 643A—Love Creek Bridge and 500 feet of 22-foot concrete approaches

Contract 607—Harrington to Hughes Cross Roads—7.549 miles 16-foot traffic slag

All roadway work during the year has been completed with the following exceptions which will be carried forward into the 1941 construction season.

Contract 671—Owl's Nest Road—.33 miles of 18-foot bituminous concrete

Contract 679—N. Wyoming Railroad crossing elimination .284 miles of 18-foot traffic slag

Contract 690—Tull's Crossing elimination

Contract 737—Dewey Beach Bridge

Contract 281A—Lake Como Bridge

In addition, the Department carried on several W. P. A. projects, consisting of clearing and grubbing, grading, widening and drainage of earth roadways in the three Counties. The largest projects undertaken by W. P. A. forces were the grading for the additional roadway of the proposed divided highway from Hare's Corner to New Castle, and the Hamburg roadway from Dobbinsville to Deemer's

Beach following the abandoned trolley line across the marshland which, when paved, will eliminate an undesirable and hazardous traffic condition.

Some of the outstanding projects undertaken in the State are as follows:

In New Castle County, one project which deserves consideration is the reconstruction and widening of Delaware Avenue from Van Buren Street to Market Street. Operation upon this project began the second week in July and the street was opened to traffic the first week in November. Automobile and trackless trolley traffic had to be maintained, new water lines installed and extended in the street bed, sewers extended and rebuilt, new gas lines and telephone conduits installed while the work was in progress. A schedule was set up for the various agencies and this was closely followed. Much credit should be given to the cooperation of the several municipal and private utilities, the contractor, and to the City police, who directed traffic day and night. Their splendid cooperation played an important part in the building of this street.

Probably the most important improvement of the year was the construction of two additional lanes of pavement on the Governor Printz Boulevard. Since the opening of this highway in 1937, its low grade line and freedom from cross traffic have made it the most popular route north of Wilmington, particularly to truck operators.

Not only has through traffic become very heavy but it has served to open up a section which is the most rapidly growing suburban district near Wilmington. Within twelve months after its opening the two lanes originally constructed were inadequate to the traffic needs. Additional lanes were built on each side of the existing pavement from the Twelfth Street Bridge to Edge Moor, and from Edge Moor to Claymont a 22-foot pavement was constructed separated from the old pavement by a parkway 20 feet in width.

The reconstruction and widening of Main Street in Stanton adjacent to Delaware Park has been of help in re-

lieving traffic conditions through this village during the racing season.

Another project was the building of a 22-foot concrete roadway from Warwick to Middletown. This road has been overtaxed at certain seasons of the year by those visiting the shore resorts on the Chesapeake Bay. In its construction, curves have been flattened and superelevated and alignment brought up to modern practice.

In Kent County the rebuilding and superelevation of the curve at Garrison's Mill has eliminated an undesirable and hazardous traffic condition. This curve has been the scene of many accidents but since its reconstruction none have occurred at this spot.

Elimination of the North Wyoming grade crossing by means of a bypass road will solve a local problem where fatalities have occurred in the past.

The two other projects in Kent County—the Dover to Cheswold and Wyoming to Dover roadways—are experiments in the building of an intermediate type of roadway. These roads were built by stabilizing the soil; the Dover-Cheswold road with tar and asphalt; and the Wyoming-Dover road by the use of Portland cement. After a curing period, both these roads are given a surface treatment and their service will be watched with interest by the Department in order to determine whether these are economic types to be built for secondary roads.

In Sussex County, the building of the concrete roadway from Shockley's Corner to the Dewey Beach Inlet road will bypass the summer traffic to points north and south of Rehoboth without going into the town of Rehoboth. Upon the completion of the bridge over the Canal, this will be an important shore line highway and will accommodate traffic with less danger and congestion.

Another road built in Sussex County was the Dagsboro-Milk Station road which will carry traffic to points east and south of Dagsboro without the necessity of taking various

WIDENING AND RECONSTRUCTION—SHEET ASPHALT SURFACE, DELAWARE AVE. AT PENNA. AVE. & VAN BUREN ST.

right angle turns through the town of Dagsboro. It will be especially valuable to summer traffic.

Attached is a tabulation giving location, length, type of roadway, bridge, sidewalk, and miscellaneous construction advertised and awarded this year.

GRADE CROSSING PROTECTION AND ELIMINATION

Sixteen railroad grade crossings have been protected by flashing light signals at a cost of $49,655.25.

Contracts for the elimination of grade crossings at Tull's Crossing, Seaford, and a crossing at North Wyoming are in progress and will be completed by early spring. The contract cost of these eliminations is $83,184.50, and is borne by the Federal government. However, the expense of securing rights of way is shared equally by the State and the railroad companies.

DIVISION OF RIGHT OF WAY

Besides the right of way agreements required by the State for the construction or reconstruction of highways during 1940, the Right of Way Department also had to obtain the land required by the Federal government, for the construction of the new bridge over the Delaware and Chesapeake Canal at St. Georges in New Castle County. In order to obtain this right of way, several properties were purchased in their entirety. On these properties the houses have been relocated beyond the right of way line and placed in livable condition.

At the session of the Legislature, permission will be asked to sell these properties.

During the year of 1940, the Right of Way Division has obtained 209 options, written 647 descriptions and secured the execution of 325 deeds and 183 releases. Fourteen (14) properties were also secured by condemnation. Construction work required the moving of twenty-four (24) buildings and the demolition of nine (9) buildings.

NEW DUAL HIGHWAY SHELL ROAD—STOCKDALE, GOVERNOR PRINTZ BLVD.

The total cost of the work done by this division for the year was $245,945.59. Of this, $162,607.00 was expended on the right of way for the St. Georges Bridge.

MAINTENANCE PRIMARY SYSTEM

With the exception of a storm of cloudburst proportions near the Town of Smyrna on the night of September 1st, there were no serious flood conditions during the year. The Smyrna storm washed out three milldams in the vicinity, the dam at Lake Como in the Town of Smyrna was topped and washed away, pouring its contents against the du Pont Boulevard, undermining and destroying the concrete arch bridge. A temporary bridge was placed in service within 72 hours and bids for a new structure were received on October 2nd. The new bridge is a rigid frame design with a span of 40 feet. The total cost of bridge and roadway will be about $26,000.

A snowstorm of great intensity and accompanied by high winds swept the State on the night of February 14th. Drifts from 5 to 9 feet in depth were formed in many localities and the snow was packed with such a density that it could be walked over without difficulty. Under these conditions ordinary snow plows were almost useless and there was considerable delay in opening many of the highways, particularly in Northern New Castle County.

To provide for such emergencies there has been purchased by the Department five 7½-to-10-ton four wheel drive trucks equipped with hydraulically operated V plows and wings and a Snogo rotary plow mounted on a 5-ton truck and driven by a 175 horse power auxiliary motor. This equipment will be held in reserve and used only in emergencies where other equipment is inadequate.

The total cost of maintenance on the primary system of State Highways for the year amounted to $592,464.29 for the total of 2,055 miles, or $288.30 per mile, which includes expenditures for plant and equipment.

RECONSTRUCTION AND BANKING OF CURVE AT GARRISON'S MILL, KENT COUNTY

MAINTENANCE SECONDARY SYSTEM

The secondary system of 2,682 miles includes all the roads of the State outside of the incorporated towns and cities not included in the primary system.

The total cost of the secondary road maintenance for the year was $400,543.48.

SECONDARY CONSTRUCTION

It has been the policy of the Department since taking over the County roads in 1935 to improve the secondary roads as rapidly as possible, by the application of stabilized earth, gravel and slag, and, as conditions warranted, to surface-treat these roads with bituminous materials. The development and construction of these low-cost roads has met with the enthusiastic approval of school bus operators, rural mail carriers, doctors and the farmers living along these highways. During the year 27 creosoted timber bridges have been built on the secondary system, 62 miles have been surfaced with gravel or stabilized earth, 35 miles have been graded and drained, 13,950 lineal feet of concrete pipe have been placed, while 86 miles have been given initial surface treatments of asphaltic material, providing a dustless, smooth riding surface.

By contract and with its own forces the Department has built 249 creosoted timber bridges to replace unsafe and obsolete structures on the secondary highways since these were taken over from the counties in 1935. Another year will practically complete this program and it will be many years before any considerable repairs will be necessary on these structures.

This work has been done at a cost for the year of $261,835.46. If funds are made available, this work should be continued.

STATEWIDE HIGHWAY PLANNING SURVEY

In October the State entered into an agreement with the United States Public Roads Administration to conduct

SNOW REMOVAL—RIVER ROAD, NEW CASTLE COUNTY

a State-Wide Highway Planning Survey. Similar studies are being conducted in each of the forty-eight states. Preparation for this work was made during September and the Highway Planning Division began operations on October 1st.

The Inventory Field Work was started on October 14th and is now 96 per cent complete.

It is planned to start the Traffic Field Work on January 5th, 1941.

The purpose of the Planning Survey is to determine the present condition of the highways of the State, the volume, kind and distribution of traffic, the adequacy of existing highways and bridges, in order that a comprehensive and sound long-range program for future highway improvement may be developed, based on the facts thus determined.

TRAFFIC ENGINEERING DIVISION

As mentioned in last year's report, an engineer of the Department was awarded an Alfred P. Sloan, Jr., Fellowship in Traffic Engineering at the Yale University Traffic Research Bureau.

On his graduation in May a Traffic Engineering Division was organized and became effective on June 1st, 1940.

During the course of the past six months, the division has been actively engaged in conducting the following studies and investigations, which have resulted in minor or major changes in traffic control.

Signal Installations	2
Intersection Designs	3
Reports for Towns	2
Detour Studies	7
Traffic Complaints	12
Signal Changes	6
Sign Studies	24
Parking Studies	3
Marking Studies	6
Traffic Counts	4
Pedestrian Studies	1
School Studies	1
Total	71

U. S. NO. 13—COLEMAN DU PONT BOULEVARD, SUSSEX COUNTY

A project which has been undertaken by the division is that of gathering and summarizing factual information to be used for the preparation of speed zoning legislation. Forty stations have been established throughout the State at which locations vehicular speeds will be checked. It is estimated that speed data will be gathered on some 6,000 vehicles which will include both passenger cars and trucks. The summarization of this data will no doubt give the State very definite facts upon which to determine a reasonable safe speed for our highways.

Inasmuch as the results of the Planning Survey will supplement and furnish a basis for much of the work of the Traffic Engineering Division, Mr. Walter B. McKendrick, Jr., Traffic Engineer, was made the Director of the State Highway Planning Survey, and will act as head of both of these Divisions until the work of the Planning Survey is completed.

MOSQUITO CONTROL

The 107th General Assembly abolished the State Mosquito Control Commission, and directed the State Highway Department to take over its records, equipment and property and to carry on such work as the Department deemed advisable for the control of mosquitoes in the State. The sum of $25,000 was appropriated from the General Fund for the purpose.

Recognizing the necessity of a sound biological background for the effective carrying out of mosquito control work, the Department entered into an agreement with the Department of Entomology of the Agricultural Experiment Station of the University of Delaware, which provided that the Department of Entomology would carry on all investigational work pertaining to the biology and control of mosquitoes, and furnish the State Highway Department with the results of their investigation and with the necessary entomological advice and assistance required; that all control work would be done by the Highway Department and

NEW CRANSTON HEIGHTS VIADUCT

that the Highway Department would render such assistance to the Department of Entomology as might be required in their studies.

This cooperative arrangement has been of great value and assistance to the Highway Department, and I wish to express my sincere appreciation of the services rendered.

A study of the conditions to be met indicated that the amount appropriated was entirely insufficient to keep clean the 2,199 miles of ditches dug by the Commission, and that the immediate problem was to expend the appropriation in such a way as to provide the greatest relief in the breeding areas in the vicinity of summer resorts and towns.

An organization was effected and work was begun on June 18th, 1940. Headquarters were established at the abandoned C. C. C. Camp at Lewes.

Inspectors were employed earlier than for previous seasons but were used for spot cleaning until about the middle of May, and then they began regular inspection work. The force consisted of six men, one for each of five specified inspection areas, and one chief inspector. The chief inspector's duties were to check up on each inspector once or twice each week, to make special inspections and to do some spray work. Weekly inspections were made over the areas around Broadkill Road, and south to Millers Creek below Bethany Beach, and west along Indian River to Oak Orchard.

Inspectors were assigned to the critical areas and breeding locations and clogged ditches noted; these were followed by spraying and ditch cleaning crews. During the season inspectors located 3,696 mosquito breeding areas, covering an area totalling 9,987,961 square feet; of this area 5,456,772 square feet were sprayed, a total of 11,869 gallons of diluted larvacide being required.

Breeding was rather heavy throughout the season compared to previous years since the work was completed. This was mostly due to the general condition of the ditches.

WIDENING-RECONSTRUCTION-SHEET ASPHALT SURFACE—DELAWARE AVENUE AT ADAMS STREET, WILMINGTON

Three of the most serious breeding areas were the Lewes Capes, Rehoboth to Gordon Pond and Dewey Beach south to the inlet. As a result of the Northeast storm that occurred in late August, breeding was found almost everywhere and very little could be done towards control, but an attempt was made to control most of the concentrated breeding nearest the summer resorts. Previous to this rather effective control was accomplished, and the flight, as results of the late August storm, did not occur until after Labor day.

With the small amount appropriated for maintenance work it was specified by the Department that due to existing marsh conditions, only spot cleaning be done and wherever necessary to spray concentrated breeding affecting the greater centers of populations. These rules were followed as closely as possible. However, spot cleaning was more than removing small obstructions from the ditches. In most areas considerable cleaning had to be done and in general all areas were much worse than expected.

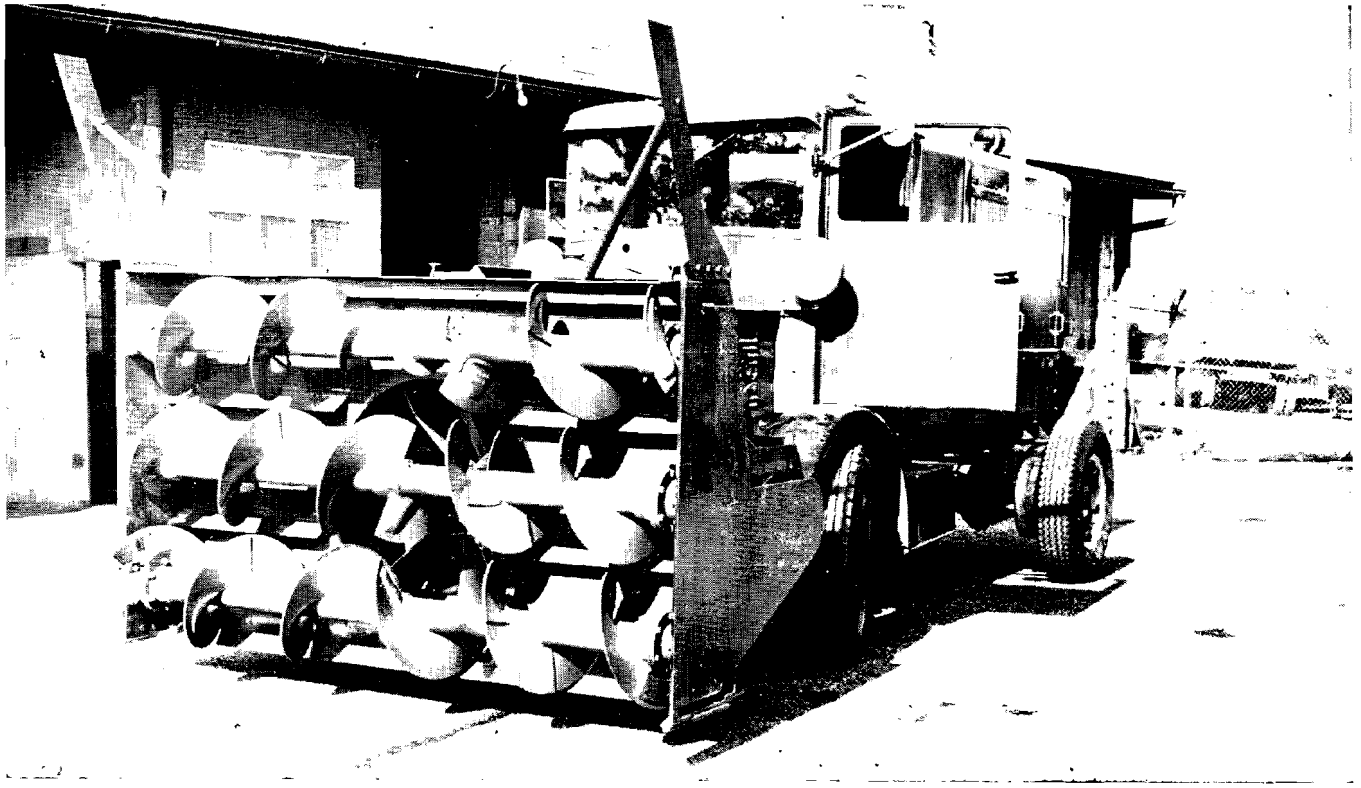
Up to December 31st, the State hand crew cleaned 700,684 linear feet at a cost of .0065 per linear foot (figures include foreman and labor only), by machine 104,045 linear feet, and 105,960 linear feet by Mosquito Control W. P. A. crew. The total feet of ditch cleaned to date is about 11% of the total linear feet dug by the C. C. C. in Sussex County.

With the W. P. A. ditching, outlet box and bridge projects, several needed outlets and bridges were constructed.

The work done by the Mosquito Control Commission was unquestionably successful in reducing the plague of mosquitoes in those areas where the work was carried on, and it is recommended that an appropriation of not less than $35,000 annually be made by the General Assembly for the purpose of maintaining the ditching and spraying infected areas and work incidental thereto.

DELAWARE RIVER CROSSING REPORT

The 107th General Assembly directed that the State Highway Department investigate the feasibility of a cross-



NEW ROTARY SNOW PLOW

ing of the Delaware River near Wilmington, and make a detailed report to the Governor and the 108th General Assembly on the relative merits and costs of a bridge or tunnel; the probable revenue to be derived therefrom; and the legal questions involved in the construction and operation of such a utility.

Nationally known consultants and authorities in their specialized fields were engaged and the final report will be submitted early in the Legislative session.

1941 CONSTRUCTION PROGRAM

For the construction season of 1941, the Department has adopted for submitting to the Public Roads Administration for its approval the program which follows:

BITUMINOUS STABILIZED SOIL ROAD—DOVER TO CHESWOLD

1941 CONSTRUCTION PROGRAM
PRIMARY SYSTEM

New Castle County

Location	Type	Mileage	Total Cost
Lancaster Pk. (Gap Rd. to Penna. Line)	Grading & Structures	2.7	$120,000.00
Kennett Pike (Barley Mill to Pa. Line)	Widening & Resurfacing	4.6	102,000.00
Glasgow to Md. Line	Widening & Resurfacing	4.1	44,000.00
Front St. Wilmington (Mkt. to Walnut)	Asphalt Pavement	0.2	34,000.00
Baynard Boulevard (Wilmington)	Reconstruction	0.66	86,000.00
Concord Pike (Talleyville to Pa. Line)	Reconstruction	2.0	74,000.00
Total Primary New Castle County			$460,000.00

Kent County

Leipsic Bridge & Causeway	Timber Bridge & Appr.	0.25	$ 50,000.00
Frederica to Little Heaven	Resurfacing	2.4	44,000.00
Farmington to Harrington	Widening & Resurfacing	2.27	51,000.00
Pearson to Md. Line	Widening	7.02	64,000.00
Total Primary Kent County			$209,000.00

Sussex County

Dewey Beach Bridge (Balance of Funds)	Bascule Bridge	0.03	$ 64,439.00
Blades to Concord	Widening	3.4	52,000.00
Reliance to Seaford	Widening	5.5	55,000.00
Shawnee to Milford	Widening & Resurfacing	2.23	27,000.00
Selbyville to Clarksville	Reconstruction	8.1	60,000.00
Total Primary Sussex County			$258,439.00
Total Primary			$927,439.00

SNOWFALL ALONG U. S. NO. 113

SECONDARY SYSTEM

New Castle County

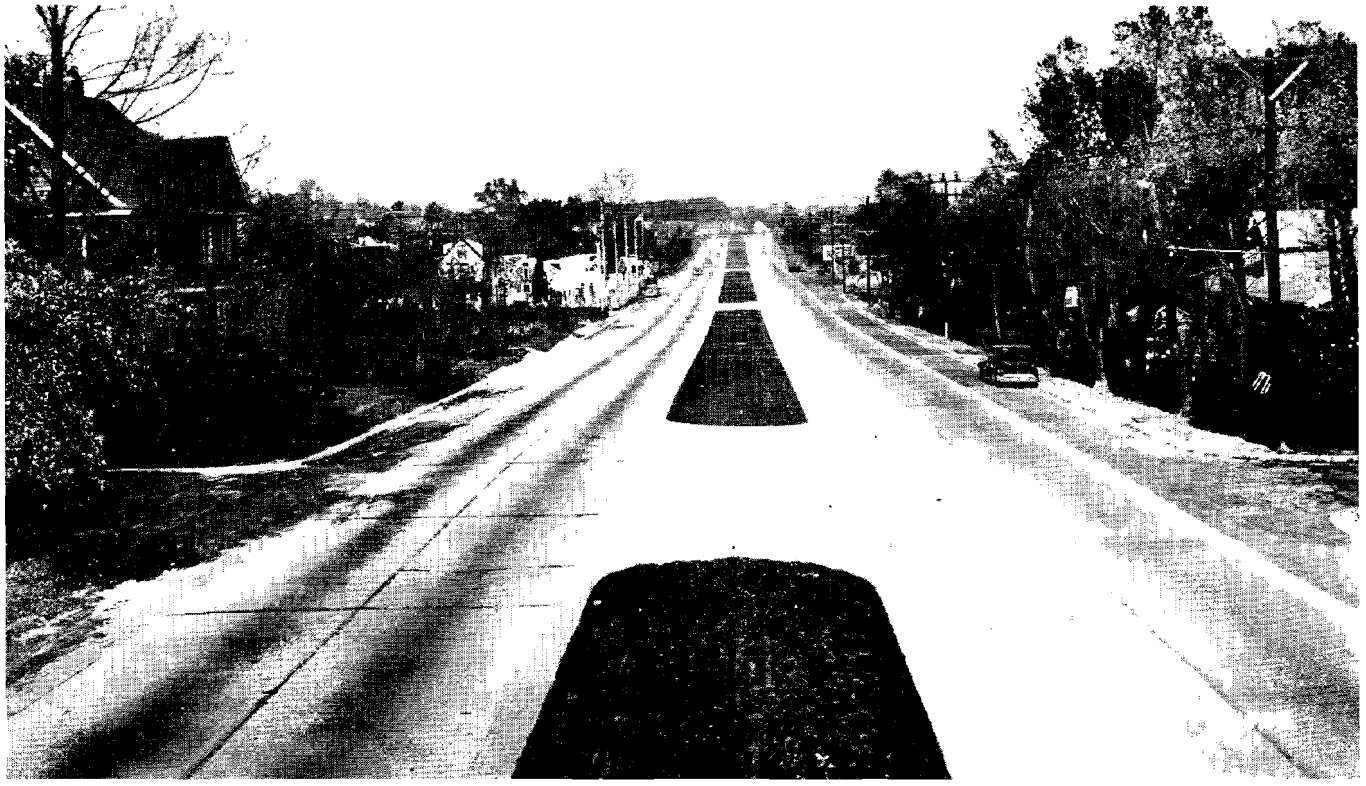
Location	Type	Mileage	Total Cost	
White Clay Creek Bridge	Reconstruction Bridge	0.02	$ 67,668.00	
Curtis Mill Bridge	Reconstruction Bridge	0.02	65,000.00	
Total Secondary New Castle County			$132,668.00	

Kent County

Md. Line to Kenton	Widening	4.6	$ 45,000.00	
Dover to Cheswold (Bal. of Funds)	Soil Bituminous Road	4.86	15,426.00	
Dover to Little Creek	Widening	4.5	51,000.00	
Total Secondary Kent County			$111,426.00	

Sussex County

Oakley to Shawnee	Traffic Bound Road	6.93	$ 37,000.00	
Atlanta to Greens Mill	Widening	5.2	52,000.00	
Lovetts Nursery-Jefferson X-Rd.	Traffic Bound Road	4.9	36,000.00	
Bridgeville to Wesley Chapel	Traffic Bound Road	3.9	32,000.00	
Total Secondary Sussex County			$157,000.00	
Total Secondary System				$401,094.00
Total All Funds				$1,328,533.00



NEW DUAL HIGHWAY—HOLLY OAK RD. AT CHESTNUT—GOVERNOR PRINTZ BOULEVARD

GOVERNOR PRINTZ BOULEVARD

The completion of the Governor Printz Boulevard as a dual highway to Claymont emphasizes anew the congested and confused traffic condition existing between Claymont and the Pennsylvania State Line, especially at the Naaman's Creek Road intersections with the Philadelphia Pike and Ridge Road. The State of Pennsylvania is now widening and improving Ridge Road through to Chester, further increasing the congestion at these points.

To eliminate this congestion and provide a satisfactory connection with the Governor Printz Boulevard and Ridge Road would probably cost upwards of $1,000,000.

AN INVESTMENT AND A PROBLEM

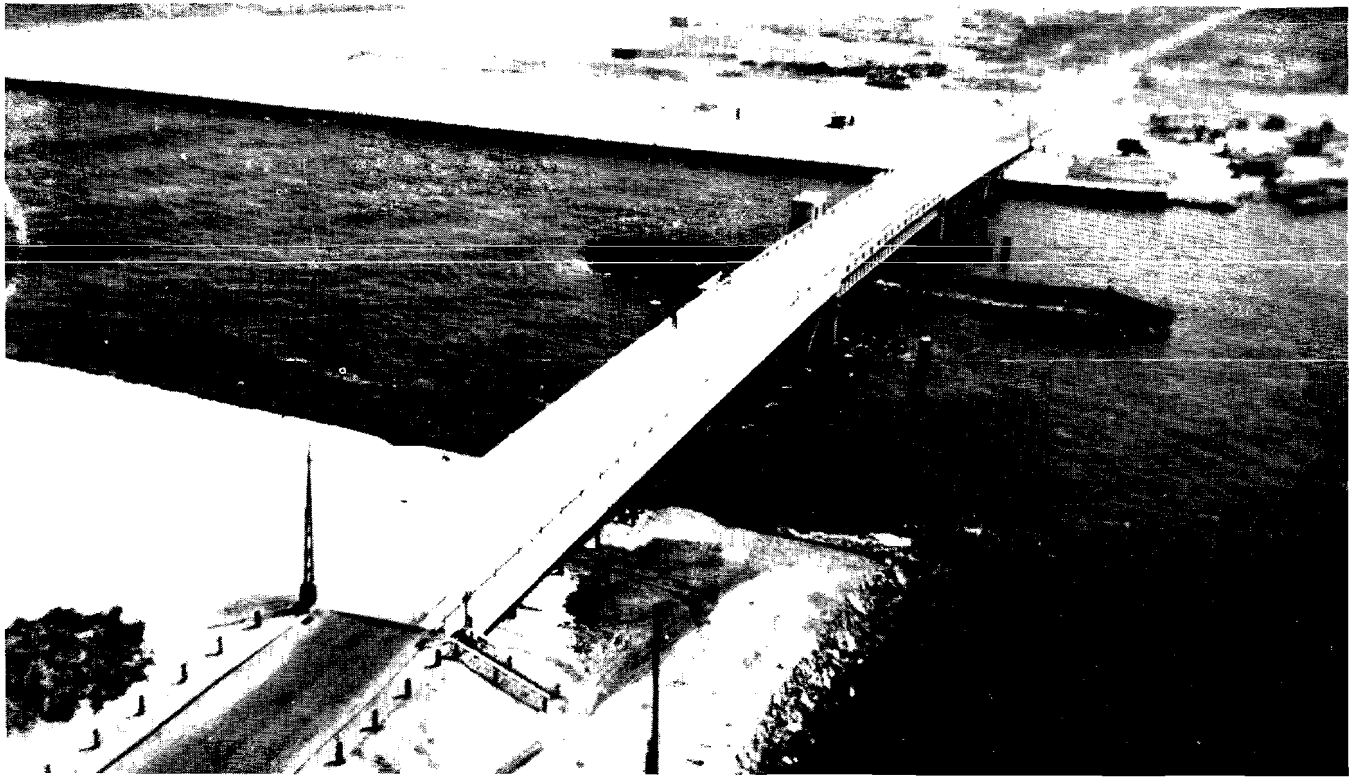
During the past twenty years there has been built up in Delaware a great public utility which enters into the daily life of nearly every citizen—the State Highway System.

Business, social life, the church, the public schools, the delivery of the mails, the distribution of food and the movement of produce from farm to market are all dependent on modern transportation, moving over modern highways.

The closing of these highways for a single day would disrupt the business, social activities and the operation of the public schools throughout the entire State.

The safety of tens of thousands of our citizens and thousands of our children would be daily endangered if the highways were not adequately maintained, policed and constructed so as to provide safe, convenient and orderly transportation.

Built around and inseparable from this highway system is a large industry engaged in the transportation of goods and persons. In a recent year there was hauled by actual count over the du Pont Boulevard almost a million crates of poultry carrying 19,418,737 fowls; 213,374 bushels of peach-



LOOKING DOWN OVER CHARLES W. CULLEN BRIDGE, INDIAN RIVER INLET

es; 1,118,931 crates of cantaloupes; 946,924 crates of strawberries; and 2,108,083 bushels of potatoes, besides great quantities of other goods and persons. In one day over 35,000 cars carrying more than 100,000 persons have travelled over this highway.

This transportation industry is serviced and supplied by other allied industries, furnishing and repairing automotive vehicles, supplying oils and gas, with hostelries and restaurants for the entertainment and comfort of the travelers.

In fact, the highway system with its rolling stock, garages, filling stations and restaurants is comparable to a railroad system with all its accessories, and represents an enormous investment of private and public capital.

Engaged in carrying on this huge industry there are employed in the State of Delaware according to best figures available approximately 10,000 workers, or nearly one-eighth of all gainfully employed in the State.

The users of this utility paid to the State for the privilege of using the highways in the year ending June 30th, 1940, $3,336,500. Of this sum the maintenance of the roads of the State took $999,700; State Police, $270,800; the Motor Vehicle Department, $147,000; the administration of the State Highway Department, $65,000; $700,200 was spent for interest and retirement of State and County road bonds; $13,800 covered miscellaneous items; while $500,000 went to the General Fund. During the same time $2,118,000 was spent for the construction and reconstruction of highways. Of this amount, approximately $640,000 was from motor vehicle funds; $608,000, Federal Aid; and the remainder, $870,000, was a balance carried over from a bond issue of the previous year.

To match available Federal funds for road construction in the fiscal years 1942 and 1943 will require $975,000 and $916,500, respectively. This money must largely be spent on the Federal Aid system and there should be avail-

RECONSTRUCTION AND RESURFACING BLACKBIRD-ODESSA

able for State construction on secondary roads not less than $150,000 for each year for such work if the secondary roads are to be improved above present conditions.

Quoting from the report of 1939:

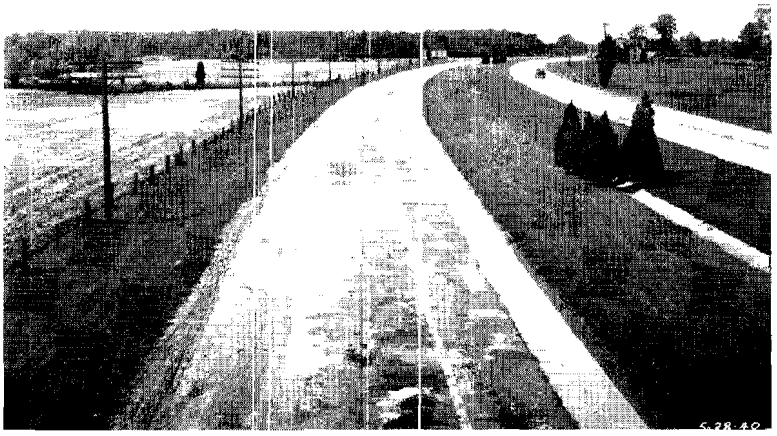
"Due to borrowing by the General Fund of the State from the Highway fund during recent years it has not been possible to meet Federal Aid without the issuing of bonds and the situation has been made even more insecure by the passage by the last General Assembly of an Act requiring all the income of the State to be placed in the General Fund after June 30, 1941, and appropriations made for all purposes therefrom. At the present time there are but two states in the nation where motor vehicle fees are placed in the General Fund, and those two are notorious for the large percentage of highway funds used for other than highway purposes. It is quite evident that the purpose behind this Act is to make easier the use of motor vehicle taxes for general purposes.

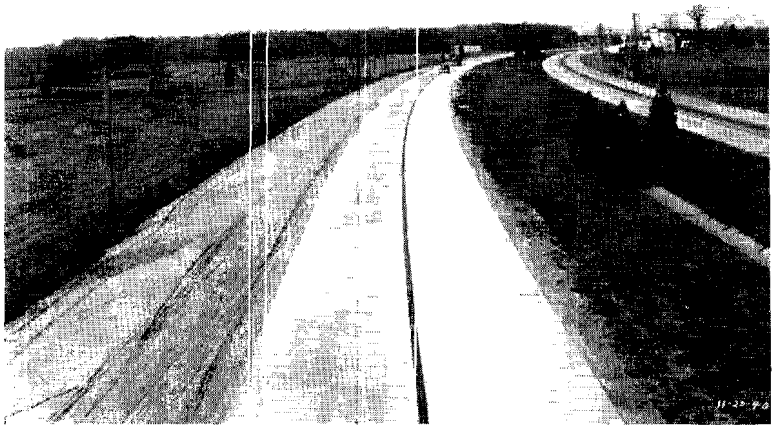
This condition indicates the importance of the highway user giving careful consideration to the question of whether he wishes his gas tax and motor vehicle fees used on the highways or for general purposes, and whether he desires the progressive improvement and development of the highway system of Delaware, or prefers to have his highway taxes diverted and the high standard of Delaware highways to decline."

The highway system is a revenue producing utility which has developed sources of income sufficient to police it, maintain it in good condition indefinitely, and furnish funds for its progressive improvement and development as the needs and increases of traffic demand additional services, provided that this income is not diverted to other uses than those for which it was derived.

FUTURE WORK

I am submitting a statement of the construction work which, in my opinion, will be required during the next five





BEFORE AND AFTER BANKING AND WIDENING OF CURVE
BLACKBIRD-ODESSA

years, to keep the State Highway system in good condition and provide additional facilities which the increasing traffic and the normal development of modernizing and improving the system would suggest.

The funds necessary to carry out this program would amount to approximately $10,000,000, or $2,000,000 per year. This is about the average annual amount spent for construction during the past ten years, including State and Federal funds.

Federal funds equal to about one-third of this amount will be available if matched during the period, which, with the gasoline tax and motor vehicle fees now collected, would finance this program in its entirety.

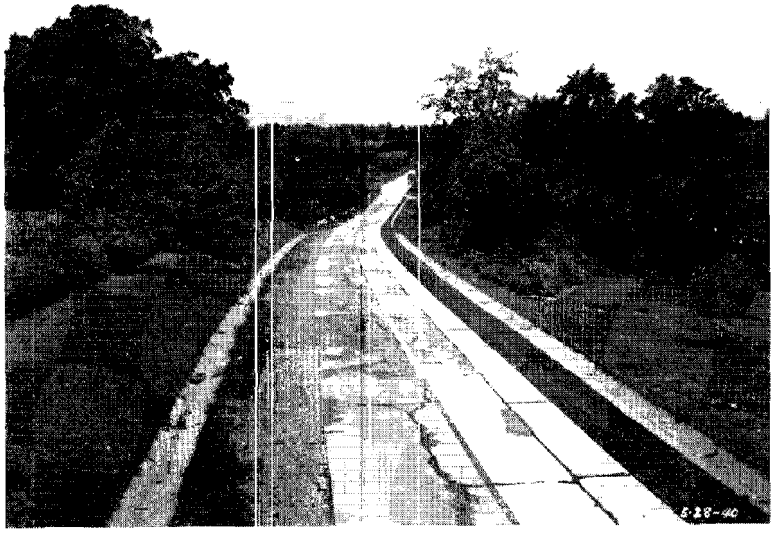
Without a reasonable approximation of this expenditure, deterioration of the system and a lack of improvement will become evident.

WIDENING, RESURFACING AND NEW CONSTRUCTION

Notwithstanding the careful maintenance and considerable expenditures each year in patching the highways of the State system, a substantial mileage of the older main routes have reached a stage where repairs are not sufficient, but a general reconstruction is necessary. Many of these pavements are now 18 to 25 years old and if they are not promptly reconstructed before their condition becomes too serious, their value as a base will be lost and complete rebuilding will be necessary at a greatly increased cost.

This work was begun in 1937, examples of which are: New Castle to Newport, in 1938 a concrete resurfacing contract between Camden and Woodside; in the same year, Tybout's Corner to Wrangle Hill on the Coleman du Pont Road was repaired; in 1940 the southbound dual highway from Odessa to Smyrna was widened and reconstructed.

I can not too strongly emphasize the necessity of a greatly enlarged program of this reconstruction work before these roads get beyond repair.



BEFORE AND AFTER RECONSTRUCTION AND RESURFACING DUAL HIGHWAY NO. 13, ODESSA-PLEASANT HILL

I am attaching a list of roads which should be so treated within the next four years, with an estimate of the cost of reconstruction.

RESURFACING

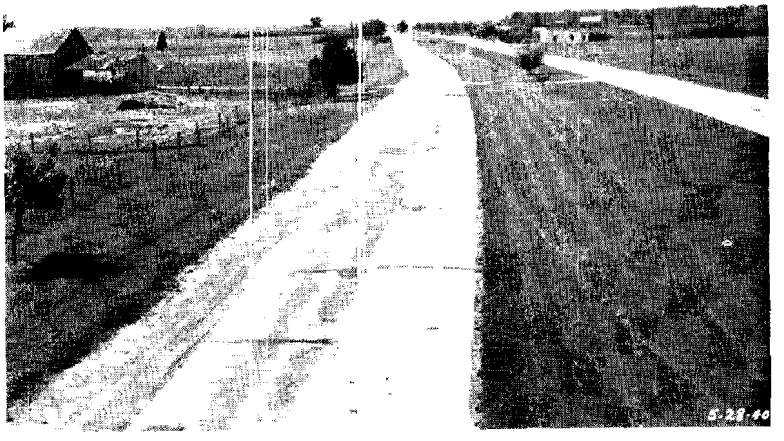
Kennett Pike	5	Miles		
Newark-Md. Line	3	"		
State Road-Md. Line	13	"		
Tybout's Cor.-Wilmington	8	"		
H & H to Tybout's Cor. via Middletown	17	"		
Odessa-Wrangle Hill	9	"		
Naaman's Creek Rd.	6	"		
Smyrna-Dover	10	"		
Dover-Delmar	50	"		
Dover-Milford	19	"		
Milford-Selbyville	30	"		
Required in next 4 years	170	"	At $20,000	$3,400,000

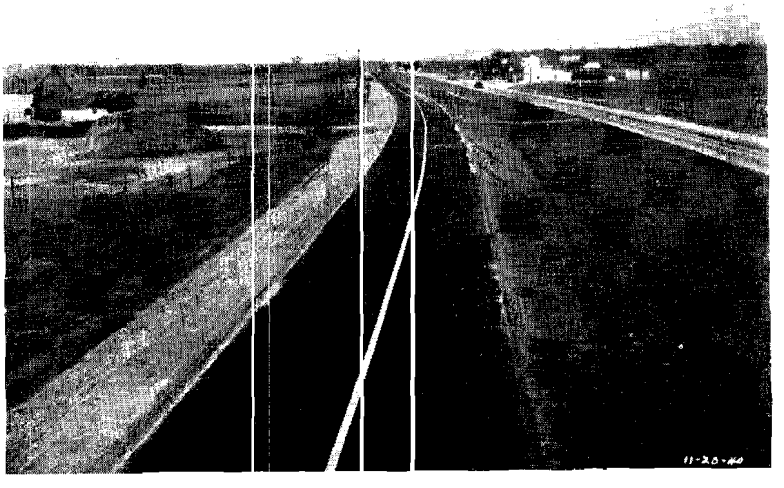
WIDENING

Since 1926 the work of widening inadequate pavements has been carried on, yet many miles are still far below modern standards.

The following highways vary from 14 to 16 feet in width and should be widened as rapidly as funds are available as they are too narrow for present-day traffic:

Brandywine Sanatorium-Gap	2	Miles	At $10,000	$ 20,000
Selbyville-Clarksville	11	"	10,000	110,000
Greenwood-Milford	11	"	10,000	110,000
Atlanta-Seaford	8	"	10,000	80,000
Blades-Hardscrabble	14	"	10,000	140,000
Md. Line-Greenwood-Rehoboth Rd.	20	"	10,000	200,000
Kenton to Md. Line Via Hartly	8	"	10,000	80,000
Bowers Beach Rd.	3	"	10,000	30,000
Clayton to Md. Line	7	"	10,000	70,000
Little Creek-Devils Hill	4	"	20,000	80,000
Needed for present-day traffic.	84	"		$920,000





BEFORE AND AFTER WIDENING AND RESURFACING SOUTHBOUND DUAL HIGHWAY NO. 13

NEW CONSTRUCTION

Distributed throughout the State there are various bottlenecks and unsatisfactory stretches of highway which should be improved or eliminated during the next few years, and some building projects which will be needed in the near future to care for the needs of the Department. A list of such projects is attached.

Concord Pike	2 Miles		$ 90,000
Lancaster Pike	3 "		150,000
Elsmere-Wilmington	1 "		200,000
Limestone-Newark	7 "		700,000
Ogleton	1½ "		60,000
Ogleton Underpass			80,000
Stanton-Christiana & Stanton Underpass			210,000
Claymont-Pennsylvania Line	2 "		1,000,000
Dual Highway South of Dover	50 "	At $60,000	$3,300,000
State Highway Building, Dover			140,000
Motor Vehicle Office and Testing Lane, Dover			60,000
Motor Vehicle Office and Testing Lane, Georgetown			60,000
For present and future consideration		Total	$6,050,000

In addition, the State Highway Department has assumed certain obligations as to construction and maintenance on approximately 13 miles of connecting streets in the City of Wilmington. A considerable part of this mileage is in poor condition and will require reconstruction in the near future at a cost of approximately $75,000 per mile.

PREFERRED PROJECTS

Next to the resurfacing of certain highways, the most urgent improvements to the State Highway system in my opinion are three in number; viz:

1. The extension of the Governor Printz Boulevard from Claymont to the Pennsylvania State Line on Ridge Road;

2. The elimination of the grade crossings of the Baltimore and Ohio and the Reading railroads at Elsmere Junction by an overhead bridge and the construction of a new highway from the present dual highway in Elsmere via Wilmington Avenue over this bridge to a connection with Union and Lincoln Streets; and

3. The construction of a dual highway from Dover south to the Maryland Line, by the route which the traffic surveys and studies now being made by the Statewide Highway Planning Survey shall determine most important and desirable.

The estimated cost of these three projects is in excess of $5,000,000 and would necessarily require several years to carry out, but I urge that surveys, plans and detailed estimates be authorized and the work undertaken as rapidly as funds become available.

DEFENSE HIGHWAYS

On October 22, 1940, there was issued a map of a strategic network of military highways, based on the Pershing Map of 1922. There were 242 miles of this network in Delaware, and of this 12.5 miles failed to meet the established minimum requirements.

The deficient sections were three in number, one in each county, and they have been listed for improvement on the 1941 construction program.

SAFETY

Despite increased activities in furtherance of safety, Delaware has experienced the national upsurge of highway accidents.

Fatal accidents outside of the City of Wilmington increased from 71 in 1939 to 82 in 1940, or 15.5 per cent. This is the greatest number of fatalities for any year since 1937 when 88 occurred. The most striking fact noted in a study of these accidents is that the deaths of pedestrians, 28, is

an increase of 100 per cent. over 1939, when 14 were killed. There was a reduction of 3 deaths in occupants of automobiles. With the constantly increasing speed and volume of traffic, every effort must be made effective if the death toll is to be kept from rising each year.

As an aid to controlling speed, I suggest that legislation allowing speed zoning be presented to the General Assembly for its consideration as a part of a program to overcome one of our most serious problems.

In cooperation with the State Board of Education and the Delaware Safety Council, a program of "Safety Through Education" was inaugurated in January, with Pvt. C. K. Lynch of the State Police in charge. The program was made available to the schools in Sussex County for a trial.

Eleven hundred and fourteen (1,114) students have been enrolled in the Driver Training Course, 317 have completed the course and 112 have obtained their drivers' licenses.

School Boy Patrols were organized in 25 schools and 15,075 students received instruction in pedestrian and highway safety.

Should these efforts continue to show results, it is hoped to extend this work to all the schools of the State.

STATE POLICE

The constantly increasing functions and duties of the State Police make it possible to mention but briefly some of the most important activities; a study of the attached reports is necessary for a comprehensive understanding of the work of the force.

During the calendar year the officers of the State Police in the performance of their duties patrolled 2,073,833 miles of highway; made 9,907 arrests; issued 54,340 reprimands, weighed 85,681 trucks; inspected 31,810 cars and trucks for lights and brakes; recovered 155 stolen cars; spent 26,791 hours on investigation and 27,563 hours on

special duty; addressed 16,189 school children on safety, and secured convictions resulting in fines totalling $92,829.62.

Total arrests decreased 17.8 per cent and arrests for reckless driving 27.5 per cent from the year previous. The greatest number of arrests, 3,706, was for reckless driving; arrests for larceny and burglary totalled 331.

A complete tabulation of arrests and accidents is appended.

The buildings at Station No. 2, State Road, were repaired and placed in order in the spring of 1940, and the personnel transferred from the Headquarters Building.

The pistol team has participated in 9 matches during the year and has made a creditable showing in close competition.

BUREAU OF INVESTIGATION

Private Carl Schnetter attended the training course of the National Police Academy of the Federal Bureau of Investigation early in the year, and on his graduation he was placed in charge of the Investigation Division of the State Police. Two men were assigned from each station to act as investigators detailed to cover criminal cases and follow them through to a satisfactory completion. The results of this Division have been gratifying.

An in-service training school was held at Headquarters from April 29th to May 24th, 1940. Much interest was shown by the officers during the entire course, and the effects of this training have been evident in the solution of numerous crimes, the most recent of which was the arrest and breaking up of a gang of five who were implicated in the theft of eight automobiles and a score of breaking and entering cases in Delaware and Maryland.

BUREAU OF ACCIDENT PREVENTION AND TRAFFIC CONTROL

Less spectacular but nonetheless valuable is the traffic and accident investigation work done by the Bureau of Accident Prevention and Traffic Control.

By a thorough investigation and study of all accidents, the underlying causes may in many cases be determined and steps taken to correct them.

The preparation of accident reports and their study is one of the duties assigned to the Bureau.

The Bureau also cooperates with the Traffic Engineering Division of the Department in the study and correction of points of high accident frequency.

Since his graduation from the Northwestern University Traffic Institute in June, Private Isaacs has been in charge of the Division.

On December 31, 1940, the force was assigned to duty as follows:

Headquarters: Superintendent, 1 Captain, on leave of absence, 2 Lieutenants, 1 Sergeant, 1 Corporal, 3 Privates, 3 Clerks. Total, 12.

Station No. 1, Penny Hill: 1 Sergeant, 3 Corporals, 15 Privates, 1 Janitor. Total, 20.

Station No. 2, State Road: 1 Sergeant, 3 Corporals, 18 Privates, 1 Clerk, 1 Janitor. Total, 24.

Station No. 3, Dover: 1 Lieutenant, 1 Sergeant, 3 Corporals, 11 Privates, 1 Clerk. Total, 17.

Station No. 4, Georgetown: 1 Sergeant, 3 Corporals, 9 Privates, 1 Clerk, 1 Janitor. Total, 15.

Station No. 5, Bridgeville: 1 Sergeant, 3 Corporals, 9 Privates, 1 Clerk, 1 Janitor. Total, 15.

Garage, Dover: 3 Mechanics.

Total, 106, of which 91 are uniformed men.

FINANCIAL STATEMENT

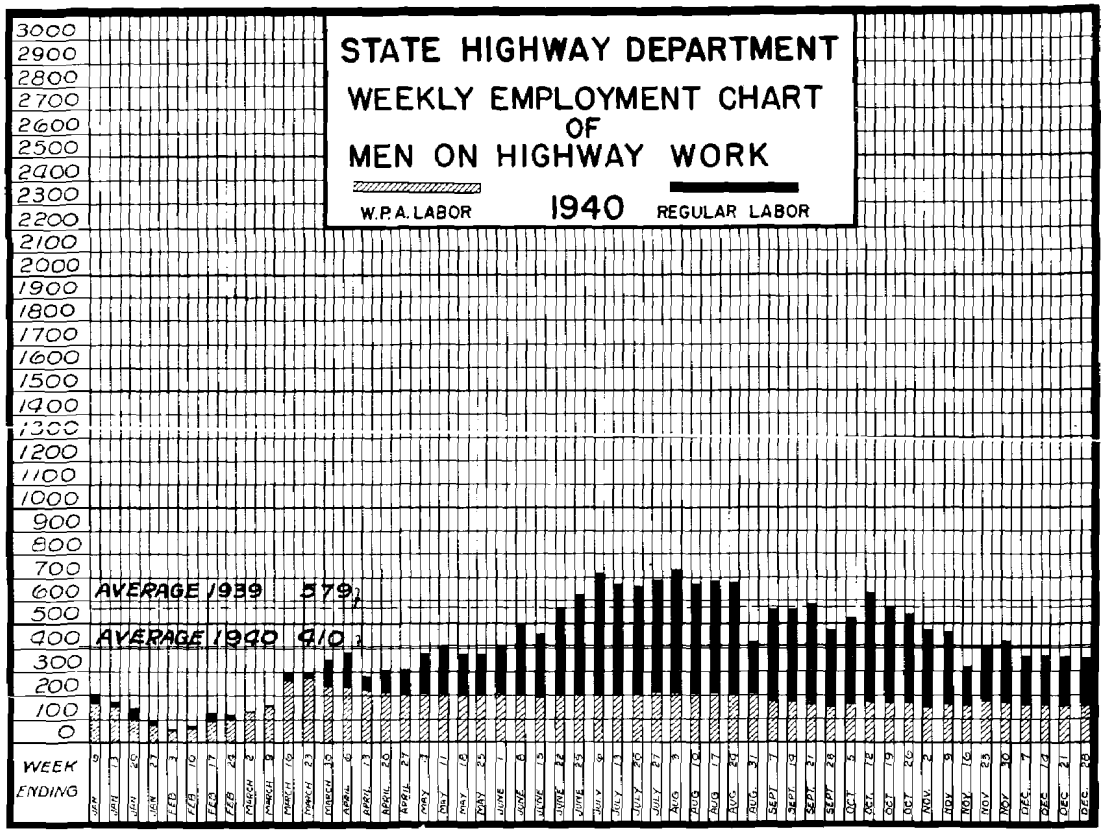
The Secretary has presented a detailed report of the financial transactions for the fiscal year ending June 30, 1940. There is attached a summarized statement of the Income and Expenditures of the Department for the period beginning January 1, 1940, and ending December 31, 1940.

INCOME

Balance, December 31, 1939	$ 173,830.82
Motor Vehicle Licenses and Fees	1,154,567.50
Motor Fuel Tax (Net)	2,322,462.22
Dealers and Distributors Licenses	2,514.00
State Police Fines	92,829.62
Auto Inspection Fees	4,813.00
Right of Way Rentals and Permit Fees	9,927.38
Equipment Rentals	2,706.38
Property Rentals	1,250.00
Federal Aid	785,718.01
Outdoor Advertising Permits	109.00
Legislative Enactment (Mosquito Control)	25,000.00
Miscellaneous Sales	1,951.10
Refunds	26,750.25
Reimbursements	23,631.35
Total Income	$4,628,060.63

EXPENDITURES

Administration	$ 68,292.26
Maintenance of Roads	956,082.64
Fixed Charges	654,658.75
State Police	267,094.31
Educational Safety Campaign	5,000.00
Motor Vehicle Department	147,809.79
Motor Fuel Tax Division	9,125.97
Legislative Enactment	250,000.00
Outdoor Advertising Division	693.21
Mosquito Control Division	15,581.34
Highway Planning Survey	8,498.49
Construction (Secondary Maintenance)	261,835.46
Construction (Contracts)	1,978,423.20
Total Expenditures	$4,623,095.52
Balance, December 31, 1940	$ 4,965.11


STATE HIGHWAY DEPARTMENT
WEEKLY EMPLOYMENT CHART
OF
MEN ON HIGHWAY WORK
W.P.A. LABOR
1940
REGULAR LABOR
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
AVERAGE 1939 579
AVERAGE 1940 910
WEEK ENDING

There were outstanding on December 31, 1940, construction contracts amounting to $441,140.27, of which the obligations of the State Highway Department totalled $205,993.71.

In concluding this report, I wish to express my appreciation of the support and counsel I have received from the Chairman and Members of the Department and of the many courtesies they have extended to me.

I wish also to acknowledge my indebtedness to each of my associates for their loyalty and able assistance, which have made possible the achievements of the year.

Respectfully submitted,

W. W. MACK

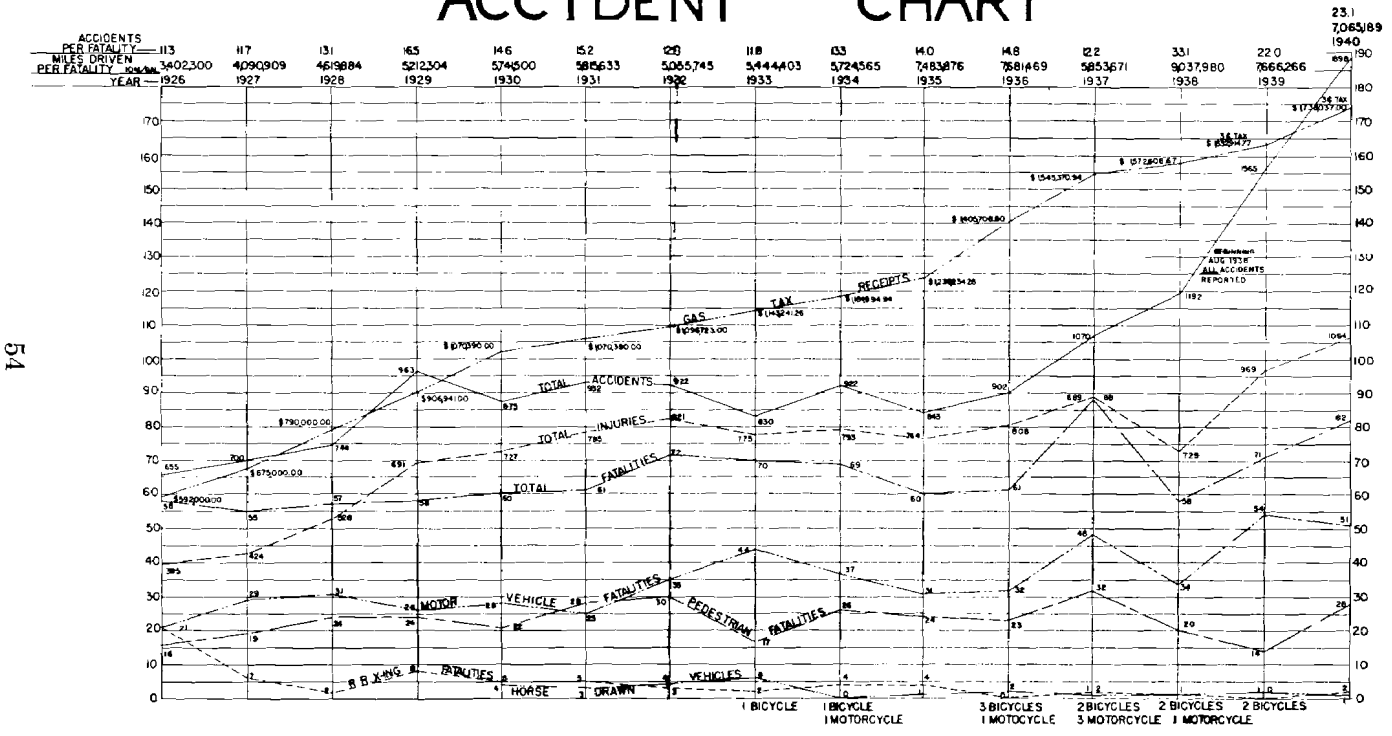
Chief Engineer

ARRESTS FOR THE YEAR 1940

Absconding	1
Accessory	9
Aiding and abetting	3
Allowing body to extend over side	8
Allowing minor to operate	1
Allowing unlicensed person to operate	103
Arson	4
Assault	17
Assault and battery	341
Assault felonious	6
Assault to murder	11
Assault to rape	3
Breach of peace	5
Breaking and entering	92
Breaking the Sabbath	12
Burglary	5
Carrying concealed a deadly weapon	16
Conducting lottery	4
Contempt of court	1
Cruelty to children	1
Defective brakes	127
Desertion and non-support	14
Discharging firearm	2
Disorderly conduct	236
Displaying another's license	28
Disregarded stop sign	394
Disturbing the peace	14
Drunk and disorderly	254
Exceeded registered weight	275
Failed to signal	9
Failed to stop upon request	5
Forgery	24
Fugitive from justice	48
Gambling	40
Held as witness	106
Highway robbery	2
Hitch hiking	3
Improper lights	75
Improper tags	28
Incorrigible	1
Interfering with officer	4
Interfering with operator	6

STATE HIGHWAY DEPARTMENT

ACCIDENT CHART



Jail breaking	6
Jay walking	5
Juvenile delinquent	21
Keeping disorderly house	5
Larceny	226
Larceny as bailee	1
Leaving accident	43
Lending operator's license	16
Lending registration plates	1
Making threats	20
Malicious mischief	16
Manslaughter	28
Murder	9
No chauffeur's license	80
No flares	249
No horn	15
No mercantile license	10
No mirror	23
No muffler	4
No operator's license	653
No permit for unusual load	42
No photograph on chauffeur's license	1
Obtaining money under false pretenses	8
Operating after revocation	10
Operating unregistered car	376
Operating while intoxicated	172
Overloaded axle	878
Overloaded semi-trailer	293
Overloaded trailer	4
Overloaded truck	60
Parked without lights	10
Parked on concrete	32
Passed traffic (red) light	78
Passed or issued worthless check	21
Pointed firearm	3
Possession stolen goods	6
Receiving and recording bets	26
Receiving stolen goods	1
Reckless driving	3,706
Resisted arrest	9
Robbery	5
Sex crimes	31
Selling obscene literature	1

Taking car without owner's consent	42
Tampering with motor vehicle	16
Throwing rubbish on highway	8
Transporting stolen goods	6
Trespassing	68
Vagrancy	44
Violating Coal Law	23
Violating Compensation Law	1
Violating Dyer Act	15
Violating Fireworks Law	3
Violating Health Laws	2
Violating Immigration Law	4
Violating learner's permit	19
Violating Liquor Laws	2
Violating Military Law	2
Violating Parole Law	4
Violating Pawnbroker Law	1
Violating School Law	1
Wife beating	4
Total number arrests	9,907
Total number reprimands	54,340
Total number trucks weighed	85,681
Total number miles patrolled	2,073,823
Total number cars inspected for lights and brakes	31,810
Total number hours spent on duty	211,050
Total number hours spent on investigation	26,791
Total number hours spent on special duty	27,563
Total number stolen cars recovered	155
Total number school children addressed on safety	16,189

ACCIDENTS FOR THE YEAR 1940

Total number accidents	1,898
Total number fatal accidents	68
Total number persons killed	82
Total number personal injury accidents	697
Total number persons injured	1,064
Total number property damage accidents	1,133
Total estimated property damage	$324,340

Fatalities by Counties

New Castle	38
Kent	16
Sussex	28
Total	82

Personal Injury Accidents by Counties

New Castle	322
Kent	168
Sussex	207
Total	697

Property Damage Accidents by Counties

New Castle	532
Kent	271
Sussex	330
Total	1,133

Fatal Accidents by Station Area

Station No. 1	5
Station No. 2	23
Station No. 3	14
Station No. 4	10
Station No. 5	16
Total	68

Personal Injury Accidents by Station Area

Station No. 1	123
Station No. 2	208
Station No. 3	115
Station No. 4	154
Station No. 5	97
Total	697

Property Damage Accidents by Stations

Station No. 1	207
Station No. 2	294
Station No. 3	190
Station No. 4	235
Station No. 5	207
Total	1,133

Type of Accident: **In Collision With:**	Total	Fatal	Non-fatal
Pedestrian	108	28	74
Other motor vehicle	1130	19	367
Railroad train	15	2	5
Street car	11		4
Animal drawn vehicle	11	1	5
Bicycle	18		13
Animal	27		3
Fixed object	288	9	104
Overturned in roadway	92	2	34
Ran off roadway	151	5	57
Other non-collision	40	1	23
Miscellaneous	7	1	5
Totals	1898	68	697

Cause:	Total	Fatal	Non-fatal
Exceeded stated speed limit	290	16	115
Exc. safe spd. but not stated limit	24		11
Exc. safe spd.—no stated limit existing	1		1
Did not have right of way	165	4	61
Following too closely	11		4
Drove thru safety zone	6	1	4
Passing standing street car	4		1
Passing on hill	10		1
Passing on curve	9		3
Cutting in	23		8
Other improper passing	4		
On wrong side of road—not in passing	177	3	53
Failure to signal or improper signal	80	6	16
Improper turn—wide right turn	44		10
Same—cut corner on left turn	20		10
Same—turned from wrong lane	35		18
Other improper turning	8		1
Disregarded police officer	5	2	2
Dis. Stop-and-go light	26	2	12
Dis. Stop sign or signal	61	3	26
Dis. warning sign or signal	32	4	16
Dis. other traffic control device	9		5
Improper starting from parked position	19		4
Improper parking location	46		15
Failed to turn on lights	8		3
Failed to dim headlights	5		2
Failed to use bright lights	4		
Other violations	76	3	28
Totals	1202	44	430

Operator's Sex:	Total	Fatal	Non-fatal
Male	2782	79	986
Female	318	7	115
Not stated	8		3
Totals	3108	86	1104

Operator's Age:	Total	Fatal	Non-fatal
Under 15	0	0	0
15	4		1
16	46	3	12
17	63		19
18	79	3	32
19	139	4	43
20	142	3	48
21-24	501	11	174
25-44	1533	40	559
45-64	493	17	173
65 and over	103	5	39
Not stated	5		1
Totals	3108	86	1104

Operator's Experience:	Total	Fatal	Non-fatal
Learner under instruction	23	1	8
Less than 3 months	51		18
Three to six months	27	1	12
Six to twelve months	45	10	13
1-5 years	746	13	258
6-10 years	551	29	184
11 years or more	1603	31	587
Not stated	62	1	24
Totals	3108	86	1104

Operator's Residence:	Total	Fatal	Non-fatal
Resident of urban area	1483	46	512
Resident of rural area	1179	32	400
Not stated	446	8	192
Totals	3108	86	1104

Residence of Operators (Proximity):	Total	Fatal	Non-fatal
Residing within 25 miles of accident location	1942	48	710
Residing elsewhere in State	263	14	75
Non-resident of State	890	24	312
Not stated	13		7
Totals	3108	86	1104
License of Operator:			
Licensed in State	2109	51	756
Resident—no License	42	1	15
Non-resident licensed in other state	902	28	316
Non-resident—no license	14	3	2
Not stated	41	3	15
Totals	3108	86	1104
Hours of Occurrence:			
12 to 1 A. M.	73	3	25
1 to 2 A. M.	84	5	29
2 to 3 A. M.	59	2	22
3 to 4 A. M.	43	3	13
4 to 5 A. M.	41	1	18
5 to 6 A. M.	41	1	12
6 to 7 A. M.	34		13
7 to 8 A. M.	59	1	16
8 to 9 A. M.	48	4	18
9 to 10 A. M.	60	2	17
10 to 11 A. M.	61		28
11 to 12 A. M.	80	2	31
12 to 1 P. M.	77	3	24
1 to 2 P. M.	67	1	24
2 to 3 P. M.	105	3	43
3 to 4 P. M.	125	4	48
4 to 5 P. M.	119	3	40
5 to 6 P. M.	139	2	66
6 to 7 P. M.	104	5	39
7 to 8 P. M.	98	3	40
8 to 9 P. M.	91	4	31
9 to 10 P. M.	81	5	24
10 to 11 P. M.	101	7	33
11 to 12 P. M.	98	4	40
Not stated	10		3
Totals	1898	68	697

Day of the Week:	Total	Fatal	Non-fatal
Monday	184	6	72
Tuesday	215	8	65
Wednesday	216	8	63
Thursday	239	6	86
Friday	292	11	109
Saturday	405	15	166
Sunday	344	14	135
Not stated	3		1
Totals	1898	68	697

Light Conditions:			
Daylight	1016	25	368
Dusk	33	2	17
Dawn	24		5
Darkness—Street or Highway Lighted	179	8	53
Darkness—Street or Highway Not Lighted	630	28	244
Darkness—Lighting not stated	8	2	4
Not stated	8	3	1
Totals	1898	68	697

Character of Location:			
Street intersection (urban)	101	5	36
Highway intersection (rural)	488	11	178
Alley intersection	8		1
Driveway intersection	65	3	22
Railroad crossing	20	1	5
Bridge or overpass	22	1	9
Underpass	4		3
In alley	8	1	2
All others	1180	46	438
Not stated	2		
Totals	1898	68	697

Road Surface Condition:			
Dry	1272	53	479
Wet	396	14	149
Muddy	84		19
Snowy	92	1	31
Icy	48		17
Not stated	6		2
Totals	1898	68	697

Weather Conditions:	Total	Fatal	Non-fatal
Clear	1171	46	436
Cloudy	298	11	101
Raining	284	9	109
Snowing	83		34
Fog	56	2	15
Other	3		2
Not stated	3		
Totals	1898	68	697
Type of Motor Vehicle:			
Passenger car	2439	61	875
Passenger car and trailer	22		11
Pass. car and house trailer	0	0	0
Truck	515	18	143
Truck and trailer	30		13
Truck tractor	12		6
Truck tractor and semi-trailer	25	2	4
Other combination	5	1	1
Other tractor	4		
Taxicab	4		2
Bus	21	3	11
School bus	14	2	5
Motorcycle	8		8
Trackless Trolley	2		2
Other	5		3
Not stated	2		2
Totals	3108	87	1104
Driver's Condition (Drinking):			
Had not been drinking	2911	80	1023
Had been drinking—obviously drunk	63	3	25
Same—ability impaired	48	3	22
Same—ability not impaired	29		9
Same—not known whether impaired	36		16
Not stated	21		9
Totals	3108	87	1104
Pedestrian's Condition (Drinking):			
Had not been drinking	77	13	64
Had been drinking—obviously drunk	17	11	6
Same—ability impaired	3	1	2
Same—ability not impaired	1		1

	Total	Fatal	Non-fatal
Same—not known whether impaired	3	2	1
Not stated	3		3
Totals	104	27	77

Driver's Condition (Except Drinking):

Eyesight defective	26		7
Hearing defective	5		1
Other bodily defect	1		1
Ill	6		3
Fatigued	7	1	3
Apparently asleep	47	3	14
Blinded by headlights	1	1	
Other handicap	15		3
Totals	108	5	32

Pedestrian's Condition (Except Drinking):

Eyesight defective	3	1	2
Hearing defective	3	2	1
Other bodily defects	0	0	0
Ill	1		1
Fatigued or asleep	3	2	1
Other handicap	3	2	1
Totals	13	7	6

Residence of Pedestrian:

Residing within 25 miles of accident location	92	22	70
Residing elsewhere in State	8	4	4
Residing out of State	4	1	3
Not stated	0	0	0
Totals	104	27	77

Accidents by Type of Road Construction:

	Dual	Non-dual
Fatal accidents	8	60
Personal injury accidents	66	631
Property damage accidents	113	1020
Totals	187	1711

DELAWARE STATE HWY. MILEAGE
1940

TYPE	NEW CASTLE	KENT	SUSSEX	TOTALS
CONCRETE HIGHWAYS				
(DUAL) DIVIDED HIGHWAY (6-7 LANE)	50.27	10.53		60.80
TWO LANE HIGHWAYS	119.32	217.98	295.12	632.42
NINE FOOT & TEN FOOT LANES	24.90	56.87	49.65	131.42
BRICK & CONCRETE HIGHWAYS				
BRICK & CONCRETE (4 LANES)	6.39			6.39
BRICK	0.40			0.40
MACADAM HIGHWAYS				
BITUMINOUS MACADAM	376.97	21.29	9.59	407.85
GOUNT - 10 FOOT			48.15	48.15
BITUMNOUS CONCRETE				
STONE BASE	6.40		6.00	12.40
CONCRETE BASE	25.75			25.75
ASPHALT				
SAND ASPHALT			28.93	28.93
STABILIZED				
SOIL CEMENT		2.90		2.90
BITUMINOUS STABILIZED		4.87		4.87
SLAG, CINDERS, GRAVEL				
SURFACE TREATED	89.00	82.02	210.68	381.70
TOTAL DUSTLESS OR BETTER	699.40	396.46	648.12	1743.98
TRAFFIC BOUND	9.70	113.59	74.84	200.13
DIRT OR GRAVEL				
DIRT	19.00	196.34	821.05	1036.39
GRAVEL	266.40	363.87	318.87	949.14
TOTALS	994.50	1072.26	1862.88	3929.64

AM

TABULATION OF CONTRACTS AWARDED DURING 1940

Cont. No.	Location	Estimated Cost	Date of Award	Contractor	Length in Miles	Type of Roadway
600A	Chas. W. Cullen Brdg. Approaches...	$ 4,097.40	3/18/40	W. Roach & Sons, Georgetown	0.269	Traffic Bd. Gravel
647	Delaware Ave. Laurel Brdg. & S. W.	2,235.50	3/18/40	E. F. Hammond, Delmar, Del.		Brdg. Repair & S. W.
726	Seaford to Woodland Approach	12,616.50	3/18/40	George & Lynch, Dover, Del.	0.438	20′ Conc.
672A	Silver Lake, Middletown	5,152.50	4/ 2/40	E. F. Hammond, Delmar, Del.		Repairs & Fill
716	Garrison Millpond Curve	11,715.72	4/25/40	George & Lynch, Dover, Del.	0.257	Conc. 22′
735	Main St. Stanton, Widening	7,574.80	4/25/40	James Julian, Wilmington, Del.	0.341	Bit. Conc. Wdg.
703	Frogtown Crossing Approach	1,559.50	5/ 1/40	James Julian, Wilmington, Del.	0.114	Conc. Widening
727	Gov. Printz Blvd., Wilm.-Edge Moor	97,831.95	5/14/40	George & Lynch, Dover, Del.	1.855	" "
728	Gov. Printz Blvd., Edge Moor-Holly Oak	129,135.85	5/14/40	George & Lynch, Dover, Del.	2.557	Con. 22′
729	Gov. Printz Blvd., Hollyoak-Claymont	96,494.34	5/14/40	E. E. Downing, Inc., Wilmington, Del.	1.734	Conc. 22′
718	Smyrna to Blackbird	59,740.25	5/27/40	Angelo Citro, Wilmington, Del.	3.524	Resurf.
701	Blackbird to Odessa	142,837.40	5/27/40	Old Line Construction Co., Chestertown, Md.	7.540	Resurf.
683	Shockley's Cor. to Dewey Beach	75,019.50	6/19/40	Waller Paving Co., Salisbury, Md.	2.656	Conc. 22′
747	Service Drive, Dover High School	4,692.50	7/22/40	George & Lynch, Dover, Del.	0.110	Bit. Conc.
733	Dagsboro to du Pont Road	69,909.65	7/27/40	E. E. Downing, Inc., Wilmington, Del.	2.161	Conc. 22′
722A	Motts Cor.-Flemings Ldg. Bridge	2,197.00	7/22/40	E. F. Hammond, Delmar, Del.		Creo. Timber Brdg.
679	Warwick to Middletown	98,814.85	8/ 2/40	E. E. Downing, Inc., Wilmington, Del.	3.400	22′ Conc.
697	North Wyoming Grade X-ing Elimination	8,970.00	10/ 4/40	John R. Hitchens, Inc., Seaford	0.284	Slag
756	Creo. Bridge Indian River, Millsboro	4,652.50	11/20/40	John R. Hitchens, Inc., Seaford		Creo. Bridge
761	Owl's Nest Road	4,637.50	12/20/40	Stewart & Donohue, Wilmington, Del.	0.318	Curve Realignment
736	Laboratory Equipment	1,621.00	5/ 1/40	Louis Morgan & Co., Salisbury, Md.		
737	Dewey Beach to Indian River Inlet	38,482.80	5/22/40	T. B. Gatch & Sons, Baltimore, Md.		Road Mix Surf. Course
746	Reinf. Pipe Requirement	10,958.15	6/ 1/40	Mid Atlantic Conc. Prod. Co., Dover		Conc. Pipe
745	Crack Filler Material	2,452.38	6/ 1/40	Lake Asphalt Peto. Co., Harrisburg		Crack Filler
744	Gasoline Requirements 1940-41	71,340.00	6/ 1/40	Atlantic Refining Co., Wilmington		Gasoline
743	Motor Oil & Grease	4,985.00	6/ 1/40	Atlantic Refining Co., Wilmington		Oil & Grease
742	Chips for 1940, Sussex Co.	36,588.00	6/ 1/40	John R. Hitchens, Inc., Seaford		Chips
741	Chips for 1940, Kent Co.	23,474.00	6/17/40	General Crushed Stone Co.		Chips
741	Chips for 1940, Kent Co.	15,272.00	6/17/40	Philadelphia Slag Co.		Chips
740	Chips for 1940, New Castle Co.	24,050.00	6/ 1/40	Chas. Warner Co., Wilm., Del.		Chips
739	Surface Treatment, Sussex Co.	36,742.50	6/ 1/40	John R. Hitchens, Inc., Seaford		Asphalt
738	Surface Treatment, Kent Co., New Castle	50,726.00	6/ 1/40	Asphalt Service Co., Baltimore, Md.		Asphalt
690	Tull Crossing, Seaford	74,214.50	6/19/40	M. J. McDermott, Georgetown		Overhead
681	Wyoming to Dover	36,701.05	6/24/40	George & Lynch, Dover, Del.		Soil Cement
683A	Dewey Beach Bridge	151,689.50	8/ 6/40	Geo. E. Shockley, Rehoboth, Del.		Bridge
606	Dover to Cheswold	53,294.23	6/24/40	George & Lynch, Dover, Del.		Bit. Stabilization
281A	Lake Como Bridge, Smyrna	21,747.00	10/ 7/40	James Julian, Wilmington, Del.		Rigid Frame
730	Del. Ave. & 10th St., Wilmington	111,660.00	7/10/40	Olivere Paving & Constr. Co., Wilm.	0.703	Reconstruction
748	Bit. Conc. for Maintenance	12,250.00	7/22/40	A. Petrillo Co., Wilmington, Del.		Bit. Conc.
749	Motor Graders	7,696.00	7/30/40	Alban Tractor Co., Philadelphia		Graders
749	4 Motor Graders	12,000.00	8/ 6/40	King-Burrows Corp., Balto., Md.		
	TOTAL	$1,637,829.32				

NEW CASTLE COUNTY
MILEAGE AND TYPES ADVERTISED AND AWARDED
1940
ROADWAY CONTRACTS

Cont. No.	Location	24-40-foot Bit. Concrete	12-foot Cem. Concrete	22-foot Cem. Concrete	22-foot Bit. Concrete	18-foot Bit. Concrete	42-59-foot Sheet Asphalt
672A	Silver Lake Bridge Repair, Middletown						
735	Main Street, Stanton	0.341					
703	Frogtown Crossing Approach		.114				
727	Wilmington-Edge Moor			1.855			
728	Edge Moor-Holly Oak			2.557			
729	Holly Oak-Claymont			1.734			
701	Smyrna-Blackbird				3.524		
718	Blackbird-Odessa				7.540		
730	Delaware Ave., Wilmington						0.703
679	Warwick-Middletown			3.40			
761	Owl's Nest Road					.33	
		0.341	.114	9.546	11.064	.33	0.703

KENT COUNTY
MILEAGE AND TYPES ADVERTISED AND AWARDED
1940
ROADWAY CONTRACTS

Cont. No.	Location	22-foot Bit. Concrete	20-foot Soil Stabilization	18-foot Cement Soil Stabilization	18-foot Bit. Soil Stabilization	20-foot Traffic Slag
716	Reconstruction curves at Garrison's Mill	0.257				
606	Dover-Cheswold		4.861			
681	Wyoming-Dover			2.905		
747	Service Drive, Dover High School				0.11	
281A	Lake Como Bridge					
697	N. Wyoming Grade Elimination					0.284
722A	Mott's Cor. Causeway Timber Bridge					
		0.257	4.861	2.905	0.11	0.284

SUSSEX COUNTY
MILEAGE AND TYPES ADVERTISED AND AWARDED
1940

ROADWAY CONTRACTS

Cont. No.	Location	22-foot Cement Concrete	20-foot Cement Concrete	20-foot Bit. Concrete	20-foot Gravel
600A	Chas. W. Cullen Bridge Approaches				0.269
647	Delaware Ave. Bridge Repairs, Laurel				
726	Woodland Bypass, Seaford		.438		
737	Dewey Beach-Indian River Inlet			6.00	
683	Shockley's Cor.-Dewey Beach		2.058		
690	Tull's Crossing Elimination, Seaford				
733	Dagsboro-du Pont Road	2.161			
		2.161	2.496	6.00	0.269

683A Dewey Beach Bridge, Lewes-Rehoboth Canal 756 Indian River creosoted span, Millsboro

MISCELLANEOUS MAINTENANCE AND EQUIPMENT CONTRACTS

749 Motor graders
748 Bituminous concrete for maintenance (New Castle)
738 Furnishing and applying asphalt surface treatment (Kent & New Castle)
739 Furnishing and applying asphalt surface treatment (Sussex)
740 Stone chips (New Castle)
741 Stone chips (Kent)
742 Stone chips (Sussex)
743 Motor Oil and Grease—Fiscal year July 1941 (Statewide)
744 Gasoline—Fiscal year July 1941 (Statewide)
745 Bituminous joint filler (Statewide Maintenance)
746 Reinforced concrete pipe (Statewide maintenance)
736 State laboratory equipment