

*Annual Report of the Chief Engineer
State Highway Department*
1938

February 1, 1939

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

Gentlemen:

In conformity with the provisions of the State Highway Act of 1917, I am submitting for your consideration a report of the activities of the State Highway Department for the calendar year 1938 with certain recommendations for the year 1939.

A resume of the work of each division is appended.

**DIVISION OF PLANS, SURVEYS, ESTIMATES
AND FEDERAL AID**

During the year 1938 the Department held twenty-seven (27) lettings for the receipt of bids on seventy-eight (78) separate projects. These projects were divided as follows: Highways, 27; Bridges, 7; Buildings, 6; State Park, 3; Railroad Crossing Protections, 13; Roadside Lighting, 3; Roadside Beautification, 2; Police Radio, 1; Equipment, 4; Maintenance Materials, 12.

Of these projects, the United States Bureau of Public Roads participated in thirty-five (35), and the Public Works Administration in four (4). Detailed plans, specifications, estimates and other necessary documents were prepared for the above projects and submitted to the respective bureaus for approval.

Four hundred and seventy (470) proposals were prepared for bidding purposes and three hundred and fifty-five (355) bids were received during the year. Each bid received was checked item for item and tabulated.

Weekly payrolls on all active projects were received, checked, tabulated and copies forwarded to the Bureau of Public Roads and the U. S. Employment Service.

One hundred and seventy-six (176) monthly estimates were computed and checked on active projects for the year.

Forty-four (44) vouchers for federal reimbursement were prepared and submitted to the Bureau of Public Roads.

A revision of the roadway mileage and classification data was prepared in cooperation with the Bureau of Public Roads.

The following is a detailed tabulation showing the work of the Division of Surveys and Plans for the year 1938:

SURVEYS

Miles
142.4 Base Line
148.9 Topography
97.5 Cross Sections (Prel. & Final)
16 Borrow Pits (Prel. & Final)

DRAUGHTING DIVISION

Miles
280.0 Base Line & Topography Plotted
88.7 Profile Plotted
126.6 Index Plants Plotted & Traced
144.1 Plan & Profile Traced
155.6 Cross Sections Plotted (Orig. & Final)
33.3 Grade
51.1 End Areas Planimetered & Computed (Prelim. & Final)
16 Borrow Pits Plotted & Computed

In addition to the above, twelve (12) property drawings, together with miscellaneous charts, were prepared for this and other State Departments.

DIVISION OF TESTS

During the year 1938 the Division of Tests maintained strict adherence to those specifications covering materials used in Delaware State Highway construction. No major changes were made in the manner of inspecting and testing materials, and as in the past, materials were inspected at the source of supply in an effort to reduce rejections to a minimum. This system proved extremely satisfactory and during the year only two cars of stone and one load of sand were rejected at the job site.

Modern trends in several phases of construction made the revision of the Standard Specifications desirable, therefore, they were completely rewritten in rough draft. Work on these specifications is in progress.

The highlight of this year unquestionably is the authorization of a New Laboratory Building which is now under construction. Plans, Specifications and Funds were approved by the Department and, as an aid, Federal Funds were sought through the Public Works Administration. On July 26th a grant of twenty-two thousand dollars (\$22,000) was approved. Bids were received on October 5th, and the contract was awarded at a cost of \$49,438.00. This building should be completed and ready for occupancy by early summer. The new laboratory will greatly facilitate the inspection and approval of materials.

MATERIALS LABORATORY

During 1938 three men were in the Materials Laboratory running routine tests on samples of materials furnished by the Field Representatives of our Division. There were several periods when these three men were unable to keep

up with the "in-flow" of samples; however, extra work was done on numerous occasions and in this way the reporting of tests was not delayed.

The field representatives inspected and sampled all materials to be used in the construction of the different contracts throughout the year. These five men returned samples to the Materials Laboratory which in turn was responsible for the actual testing of all materials. A total of five thousand four hundred twenty (5420) samples were either completed by these eight men or completed under their direct supervision. The following tabulation will show the quantity of material represented by the bulk of these samples:

Coarse Aggregate (stone)	84,546 tons
Coarse Aggregate (gravel)	23,097 tons
Fine Aggregate	46,436 tons
Cement	264,900 bbls.
Central Mixed Concrete	19,074 cu. yds.
Slag (Traffic Bound)	6,550 tons
Slag (Surface Treatment)	14,550 tons
Brick	201,000
Concrete Pipe (all sizes)	54,672 Lin. ft.
Creosote Timber Piling	38,077 Lin. ft.
Creosote Timber & Lumber	709,362 bd. ft.
Creosote Guard Rail Posts	1,231
Untreated Oak Timber	30,733 bd. ft.
Asphalt (Surface Treatment)	1,164,548 gals.
Amiesite (Top & Bottom Course) ..	7,681 tons
Concrete Cores Removed	537
Concrete Cylinders Broken	446

As seen from the above tabulation, materials entering into concrete construction represent the greater quantity of work. Two pieces of Laboratory Equipment; namely: the "Los Angeles Abrasion Machine" and the "Autoclave" have been recently adopted as the latest methods for testing coarse aggregate and cement respectively.

The "Los Angeles Abrasion Machine" replaces the old type "Deval Machine" for the determination of loss by abrasion on the different types of coarse aggregate. The new machine has numerous advantages over the older one; however, perhaps the most important are (1) "run of the stock" coarse aggregate can be run at the job site without obtaining specially removed ledge rock from the quarries and (2) the length of the test is unquestionably shorter.

While this equipment has not been universally adopted, we believe that in the near future the "Los Angeles Rattler" will be the basis of testing all types of coarse aggregates.

The "Autoclave" is a piece of equipment especially designed for high steam pressure from which sound or unsound cement may be readily determined. Instances are known where unsound cement or cement with extremely high per cent of expansion, has been used in concrete highway construction and stretches of roadway have completely failed due to the extremely high stresses within the cement pavements, caused by the high expansion of the cement. With the new equipment the per cent of expansion can be readily determined and should it be excessive the cement can be rejected. As was mentioned concerning the "Los Angeles Rattler," this equipment is new and as yet is not universally used.

SOILS LABORATORY

As in the previous year we have continued our policy of investigating all new borrow pits and of keeping as close a check as possible on those now in use.

The subgrades of all full width concrete pavements laid this year were investigated to check their supporting values and to prevent future damage to the pavements from frost action. On two contracts this work has resulted in the placing of stabilized subgrade material designed to overcome unfavorable soil conditions.

Continuing a policy of performing a limited amount of research during slack periods, the surface and subgrade conditions of thirty-seven earth roads of known behavior were investigated. A number of frost heave experiments in line with the policy of investigating concrete road subgrades were also undertaken.

The surfaces of many secondary roads were examined and recommendations for their improvement made. In this phase of work it was possible to effect substantial savings for the Department by advising the construction forces as to best methods of improvement and also by locating new borrow pits close to the job.

The total number of samples obtained and tested was 1154. Of this number 430 came from 56 new borrow pits and 17 old ones. Twelve roads were investigated for construction during the year, this work requiring the testing of 112 samples. In addition to these, 28 roads were investigated for future construction, the preliminary work having required the obtaining and testing of 88 samples. In line with the above described work 156 admixtures of various materials were made in the laboratory and tested.

In addition to the above, eight standard samples were run at various times to check the standardization of the laboratory equipment and personnel.

EQUIPMENT AND SUPPLY EXPENDITURES

The Division of Tests has been fortunate in being able to purchase the latest standard testing devices which have been adopted by the different Materials Societies. These new pieces of equipment will not only make it possible to do more work, but further, should prevent the use of material known to cause trouble in actual construction.

During the year we have purchased the following equipment and supplies:

Los Angeles Rattler
Autoclave (Complete)

Calculator
Converted Compression Machine
Misc. Lab. Supplies
Reprinting Specifications

CONSTRUCTION

During the past year a total of twenty-seven (27) lettings were advertised comprising seventy-eight (78) separate contracts. These were divided as follows:

- 1 Dual highway contract
- 1 Concrete resurfacing contract
- 2 Concrete roadway contracts
- 7 Concrete roadway widening contracts
- 5 Street construction contracts
- 4 Traffic bound slag contracts
- 1 Stabilized road contract
- 4 Sidewalk contracts
- 1 Concrete roadway patching contract
- 1 Grading contract
- 4 Major bridge contracts and approaches
- 3 Creosoted timber bridge contracts
- 2 Roadside lighting contracts
- 2 Roadside beautification contracts
- 1 State Park contract
- 2 State Park landscape contracts
- 4 P. W. A. building contracts
- 1 Furnishing asphaltic material State-wide surface treatment
- 1 Applying asphaltic material State-wide surface treatment
- 3 Furnishing slag and stone chips State-wide surface treatment
- 13 Railroad crossing installations
- 1 Radio tower contract
- 1 Motor grader contract
- 1 Heavy-duty trailer contract
- 1 Crane contract

- 1 Truck contract
- 1 Concrete pipe State-wide maintenance contract
- 1 Slag State-wide maintenance contract
- 1 Ornamental bridge lights contract
- 1 Creosoted timber and piling contract (Sussex County maintenance)
- 1 Rough lumber sheathing contract (Sussex County maintenance)
- 1 Bituminous concrete contract (New Castle County maintenance)
- 2 Garage addition contracts
- 1 Gasoline requirement contract
- 1 Motor oil and grease contract

Proposals were received from 355 bidders on the above contracts—an average of approximately six per contract. The total contract low bids for the above projects amounted to \$2,016,194.07. The total amount spent on actual new road construction, new bridges and sidewalks, not including maintenance of roadways, new buildings, maintenance supplies and equipment, amounted to \$1,357,048.22.

In addition to the above contracts, the Department participated in numerous W. P. A. projects in the three counties consisting of clearing and grubbing, widening of dirt roads, drainage relief, sidewalk construction in urban sections, et cetera. This work was under the supervision of the Division Engineer of the respective county using W. P. A. labor.

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

- 1.266 mi. of 22-foot concrete (dual highway)
- 3.736 mi. of 22-foot concrete (resurfacing)
- 1.485 mi. of 22-foot concrete pavement
- 6.724 mi. of 20-foot concrete pavement
- 0.308 mi. of 18-foot concrete pavement
- 0.120 mi. of 56-foot bituminous concrete on concrete base course

0.079 mi. of 30-foot bituminous concrete on concrete base course
0.383 mi. of 30-foot bituminous concrete on water-bound macadam base course
1.934 mi. of 22-foot bituminous concrete on concrete base course
43.242 mi. of 4-foot concrete widening
13.992 mi. of 16-foot traffic slag
2.831 mi. of 16-foot stabilized material roadway
1.619 mi. of 4-foot concrete sidewalk
0.150 mi. of 6-foot brick sidewalk
7.156 mi. of concrete roadway patching
6.021 mi. of grading and timber bridges

In addition to the above, there was carried into 1938 construction 0.393 miles of forty-four-foot concrete roadway approaches to the Wilmington Causeway separated grade crossing.

All of the roadway and sidewalk contracts have been substantially completed with the following exceptions which will be carried forward in the 1939 construction year.

0.120 mi. of 56-foot bituminous concrete on concrete base course
2.831 mi. of 16-foot stabilized material roadway.

The past construction year was an increase over the year 1937 when total low bids for construction amounted to only \$953,004.79. This increase in construction activity is reflected in the number of men employed on the highways during 1937 and 1938. In 1937, the average men employed on the highways, both in State and W. P. A. work, was 408 men per week with the peak of weekly employment being 733 men. The past year the weekly average for the year was 665 men with a steady peak of weekly employment of nearly 1,000 men maintained during the months of August, September and October.

Of major importance in construction in New Castle County was the first step in the improvement of Capitol Trail between Wilmington and Newark. The improvement



SILVER LAKE BRIDGE, DOVER, SHOWING ROADSIDE BEAUTIFICATION

between Elsmere and Price's Corner is a dual pavement consisting of twenty-two feet of concrete roadway separated by a parkway ranging from six to thirty-five feet with adequate parkway facilities. The alignment followed the old location and is practically a straight line. The next section to be advertised during 1939 is on new location bypassing the Town of Marshallton and will be a continuation of the dual-type with a twenty-foot parkway. When the entire project is completed it will be the second dual road westward from Wilmington to the Maryland Line.

The building of a twenty-foot concrete highway from Glasgow to Newark, over a new location, is also a major improvement, shortening the distance appreciably and eliminating the narrow, winding road. This construction gives Newark a modern road connection to all points south.

The resurfacing and rebuilding of the south lane of the duPont Highway from Wrangle Hill to Tybout's Corner has replaced a roadway of nearly twenty years' use which has begun to become rough and unserviceable. In the reconstruction the pavement was widened and the curve at Corbit superelevated. A change of plans during construction greatly delayed its completion.

Concrete widening additions to the Corbit-Bear and Christiana-Newark, and New Castle-Rogers' Corner concrete roadways give greater safety to motor travel which is heavy during the summer season.

The building of Fort Christina Park in Wilmington by the Department in commemoration of the first permanent settlement of Delaware was a project of considerable proportions and was concluded in record-breaking time. The site was cleared, sewers, seawalls, brick enclosure walls, walks, and a service building, were built and the park landscaped within a few months in time for the dedication on June 27th, which was attended by the President of the United States, the Crown Prince of Sweden and many other official guests. The Park is visited daily by people from



HIGHWAY LIGHTING, ROGERS CORNER, NEAR WILMINGTON

other sections of the United States and will serve as a permanent park and memorial. A notable monument was erected in the park which was presented by the Swedish people on June 27th, 1938.

The re-building of the Woodside-Camden road by resurfacing the present concrete pavement was the outstanding construction in Kent County. In the rebuilding of the road a new concrete slab five to six inches in thickness was placed directly on the present road, its width increased to twenty-two feet and modern safety features incorporated by superelevating all curves. This type of construction, the first of its kind built in this State, will be watched with interest.

The widening of the Kenton-Smyrna and the Harrington-Burrsville roads, increasingly used on interstate truck traffic, has facilitated movement of the normal and seasonal traffic with greater safety and dispatch.

Concrete sidewalks were built on Forest and Division Streets, Dover, along built-up sections traversed by main highways, as a protection to pedestrians and school children.

The paving of East North Street and a brick sidewalk, as an approach to the new Hall of Records Building in Dover, is an addition to the State House grounds.

In Sussex County roadway construction was confined to the widening of existing concrete roads and the building of secondary roads.

Of major importance was the building of the Charles W. Cullen Bridge at Indian River Inlet on the Ocean Boulevard, the bridge over Silver Lake, Rehoboth, and the grading of the final link of Ocean Boulevard from Bethany Beach to Fenwick Island on the Maryland State Line. Plans are being pushed to surface this latter portion and it is hoped to have the entire boulevard with its bridges completed by early fall. A continuous interstate road along the ocean front connecting Rehoboth and Ocean City, Maryland, will then be in operation.



INTERSECTION FINGERBOARD ROAD AND NEW CASTLE AVENUE, LOOKING WEST, TOWARD ROGERS CORNER.

The Dagsboro-Clarksville and Georgetown-Bridgeville widenings to existing concrete roads were needed additions to narrow roadways.

The building of traffic bound slag roads from Phillips' Hill-Pusey's Cross Roads, Concord-Middleford, Laurel-James' Camp, and the Packing House Road to Maryland Line improved secondary roads traversing fertile agricultural sections.

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

BRIDGE DIVISION

The South Market Street Bridge over the Pennsylvania and Reading Railroads at South Wilmington on U. S. 13 was opened for traffic on July 18th, and was the most important structure placed in service during the year. This grade crossing elimination project, costing approximately \$210,000, was financed by Federal funds and has been fully described in previous reports. Located on the most important highway in the State, it eliminates for all time the tedious delays and fatal accidents of the past.

Bids were received August 10th, 1938, for the construction of the "Charles W. Cullen Bridge" over the Indian River Inlet, and the contract was awarded at a cost of \$165,900.00. This bridge will have a total length of 694 feet consisting of a swing span 182 feet long, furnishing two clear channels between fenders of 60 feet each. The approaches are of creosoted timber pile trestle construction with a composite laminated timber deck and reinforced concrete floor and railings, providing a roadway 24 feet in width and a 4-foot sidewalk.

The construction of this bridge was made necessary by and was a part of the agreement with the United States Engineers for the construction of a permanent Inlet 500



RECONSTRUCTED SOUTH-BOUND LANE OF THE DUAL HIGHWAY LOOKING NORTH FROM CORBIT

feet in width with steel and stone jetties extending into the Atlantic Ocean to the 15-foot contour, having a channel depth of 15 feet at low water.

The dredging of the Inlet has been finished and the jetty construction is nearing completion at this time.

The opening of the Inlet will mean much to fishing and boating interests in Sussex County. Unusually high tides and accompanying strong currents flowing through the Inlet have seriously delayed construction on the bridge during the fall and early winter. Traffic is being maintained over the old bridge.

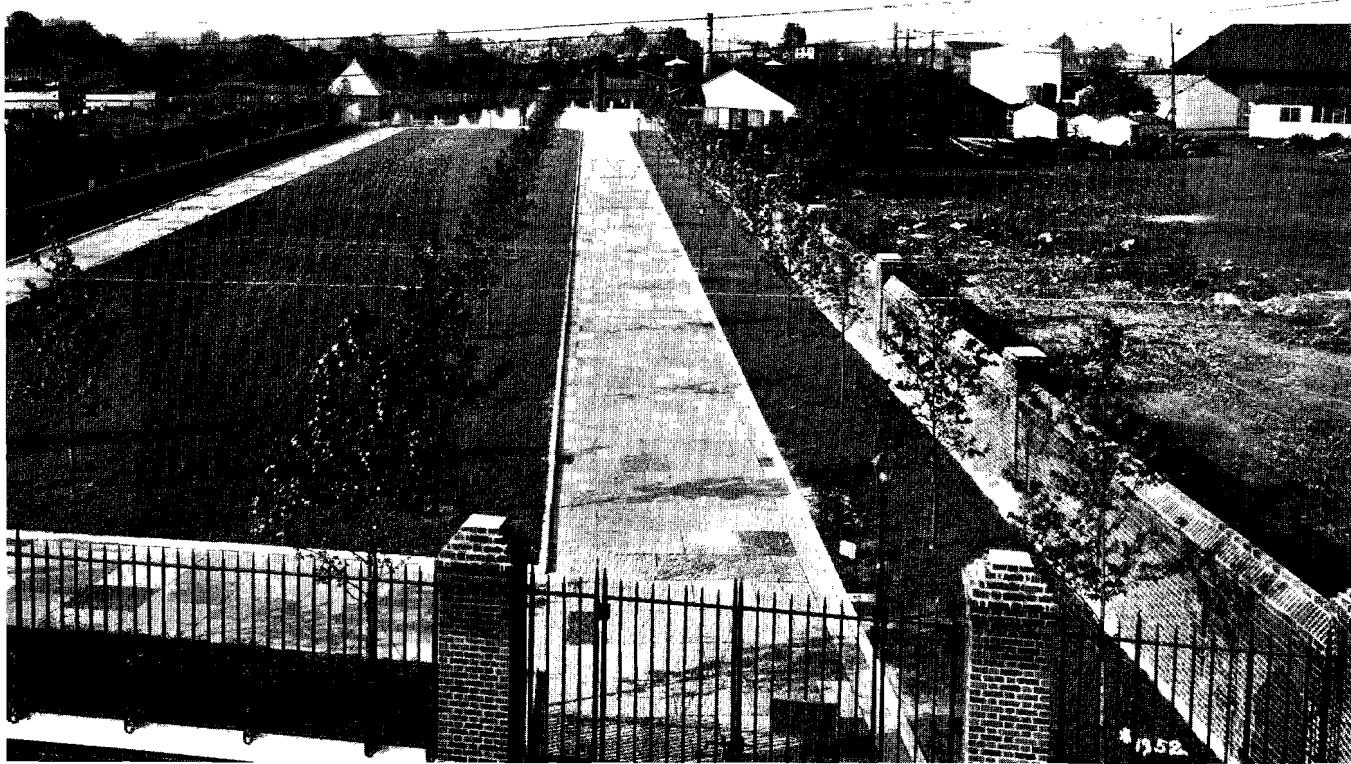
At Omar a composite concrete-creosoted timber bridge with approaches was constructed to replace a temporary structure erected after the flood of August, 1935. This improvement required new alignment and eliminated dangerous reverse curves.

The severe storm of July 13th in northwest New Castle County washed away the old covered timber bridge over the Red Clay Creek near Ashland.

Plans were prepared for a steel plate girder bridge of 100-foot span with a 24-foot roadway on concrete abutments to replace the old structure.

Application was made and a grant received from the Public Works Administration of 45 per cent of the cost of this bridge project. Bids were received on December 21st, the lowest bid amounting to \$28,500.00. The contract will be completed in the late spring.

During the year, plans were prepared for thirty-one bridges in connection with highway contracts. The spans of these structures varied from 20 to 60 feet. Other smaller drainage structures and storm sewers were designed and constructed at a total cost of \$84,800.00.



FORT CHRISTINA STATE PARK, WILMINGTON, DEDICATED JUNE 27, 1938

Plans and specifications were also drawn for a garage at Dover, for two highway lighting projects and a new fender system for the Seventh Street Bridge.

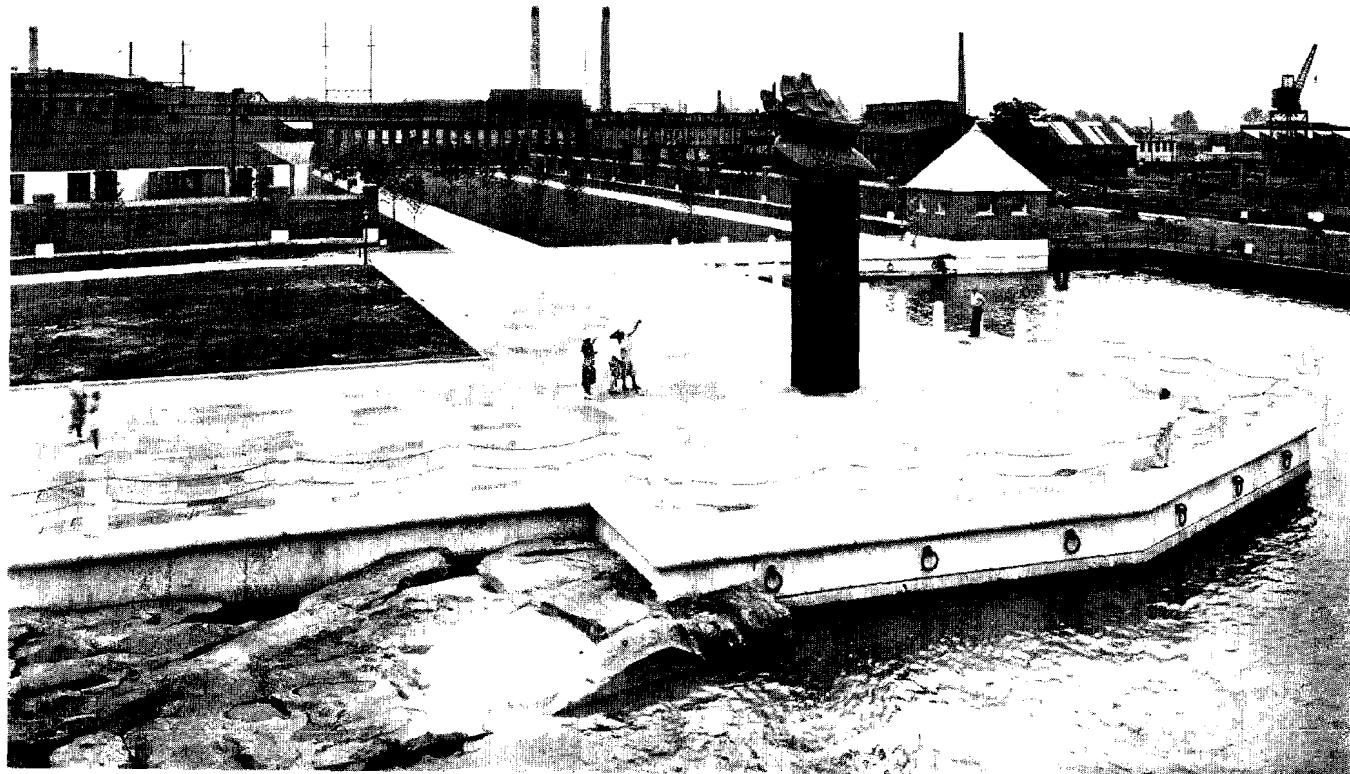
Designs were made for the replacement of the obsolete timber floor on the Third Street Bridge in Wilmington with a steel open mesh type floor. This will be the first installation in this State of this type of flooring. It differs radically from the old type solid floors in that it remains open, thereby allowing snow, ice, grease, oil, moisture or other skid inducing substances to fall through the floor. Other desirable features of this open flooring are light weight, smoothness of its riding surface, and minimum maintenance requirements.

MAINTENANCE PRIMARY SYSTEM

The maintenance of the primary highways of the State was carried on throughout the year without unusual incident. While two severe storms visited upper New Castle County during the summer, little damage was done to the primary system, and no snow storms or freezing of consequence came within the year.

The regular routine maintenance work was performed throughout the period at a total cost of \$496,049.77 for the 1,180 miles of the State system, or an average of \$420.38 per mile. This includes the cost of all new trucks, tools, road machinery and materials, as well as labor and overhead expenses required in maintenance and repair of all roads, bridges, culverts, traffic lights and signs, the painting of center lines and guard rails, the mowing of roadsides and parkways, the salaries of bridge tenders, the care of trees and shrubbery and the many items that enter into the care of a modern highway.

The general condition of the primary system is excellent, with the exception of certain sections, mentioned elsewhere in this report, which require special attention.



"THE ROCKS" AT FORT CHRISTINA STATE PARK, SHOWING THE ORIGINAL LANDING OF THE SWedes, AND MONUMENT PRESENTED TO THE UNITED STATES BY THE SWEDISH GOVERNMENT

MAINTENANCE SECONDARY SYSTEM

The secondary system is comprised of all roads in the State not in the primary system, or a total of 2,682 miles.

The policy of progressively improving the roads of the secondary system has been continued; 57.1 miles of slag and gravel roads were surfaced with bituminous materials and are now dustless and so far as riding qualities are concerned compare favorably with the higher type roads; 89.7 miles of earth roads have been graded, drained and surfaced with gravel or stabilized material.

In Sussex County, 6.61 miles of 10-foot slag roads were resurfaced and widened by Department forces using a bituminous road mix for the purpose.

Fifty-one (51) creosoted timber bridges were built to replace obsolete structures. This makes a total of approximately two hundred (200) such bridges constructed since the county highways were taken over in 1935 and has practically eliminated the old untreated and often inadequate bridges on the county system, leaving but a small mileage to be constructed in the immediate future. Sixteen thousand five hundred and seventy-nine (16,579) linear feet of reinforced concrete pipe was placed during the year, another item which should be largely reduced during future years.

Severe rain storms on May 27th and July 13th overflowed the banks of streams and did considerable damage to the secondary roads, particularly near Middletown and in the valleys of the White and Red Clay Creeks. Several bridges were badly damaged or destroyed, the largest being the covered bridge over the Red Clay Creek near Ashland, which is now being replaced by the Department aided by a P. W. A. grant. The other structures were replaced by the Department's maintenance forces.

The dam at Silver Lake, Middletown, was also washed out. Plans for its restoration are in preparation.



SILVER LAKE BRIDGE, REHOBOTH

Besides the construction done on the secondary system as noted above the regular maintenance work of repairing, scraping, and otherwise maintaining these roads was carried on at a total cost of \$515,009.47, or an average cost of \$192.05 per mile, which includes the cost of new equipment and materials.

GRADE CROSSING ELIMINATION AND PROTECTION

In 1926 there were 21 grade crossing fatalities in Delaware. This hardly seems believable in view of the fact that there has been a total of but 2 in the past 3 years. The closing and elimination of grade crossings, the education of the public in safety, and the increasing signalization of crossings have all had a part in this saving of human life.

The high cost of grade separation makes it evident that only a small number of crossings can be eliminated and that modern signal and protection devices must largely be depended on.

In addition to the completion of the South Market Street Bridge, 13 grade crossing signal installations were completed as follows:

Baltimore & Ohio Railroad

FAGH 48B	Newport Rd., Landenburg Jct.
FAGS 4	Price's Rd., Landenburg Jct.
FAGS 6	Kiamensi
FAGS 8	Cliffs (Talley Rd.)
FAGS 9	Harmony
FAGS 10	Ruthby
FAGM 7 (S)	N. College Ave., Newark

Reading Railroad

FAGS 11	New Castle Ave.
FAGS 12	Elsmere Jct.
FAGS 13	Pyle's Road
FAGS 14	duPont Rd. (Westover Hills)
FAGS 16	Montchanin
FAGS 117F	Heald Street



4' WIDENING, CHRISTIANA TO NEWARK

Twenty-nine (29) other installations are planned or under construction at a total estimated cost of \$116,400.00. These projects are financed wholly by Federal funds and will still further safeguard the public at grade crossings.

To take up funds now available amounting to \$466,000, I recommend for your consideration the following projects:

James Street and Folly Woods Crossing at Newport,
Bypass Road

North Crossing, Wyoming, Bypass Road

South Crossing, Bridgeville, Bypass Road

Heald St., Wilmington, Pennsylvania Railroad Overhead Bridge

Tull Crossing, Seaford, Pennsylvania Railroad Overhead Bridge

High Street, Seaford, Pennsylvania Railroad Overhead Bridge Reconstruction

WIDENING AND RESURFACING

The policy of widening highways of less than 18 feet in width has been continued and contracts for 43.24 miles were completed in 1938. Not only are driving conditions greatly improved on these narrow highways but the life of the roadway is prolonged.

As mentioned in last year's report, many of the main highways have pavements which have given nearly twenty (20) years of service. Some of these must be reconstructed or resurfaced immediately if they are to be salvaged at all.

During 1938, two sections totalling 7.155 miles on U. S. 13 were widened to 22 feet and resurfaced. Other sections should follow as rapidly as possible.

For the coming year I recommend that the reconstruction of the southbound lane of the duPont Boulevard, U. S. 13, be continued from Wrangle Hill to St. Georges, and from Odessa to Blackbird. As a safety measure, I would also recommend the removal and replacement with a super-



CLARK STREET, HARRINGTON, LOOKING WEST FROM U. S. 13

elevated surface the curve on the southbound lane just north of Garrison's Mill in Kent County, a location at which numerous serious accidents have occurred.

For widening projects, during the coming year, I recommend the following for your consideration:

New Castle County:

Marsh Road—Phila. Pike to Hanby's Cor.
Gap Road—Brandywine Sanitorium to Lancaster Pike
duPont Road—Richardson Park to Lancaster Pike

Kent County:

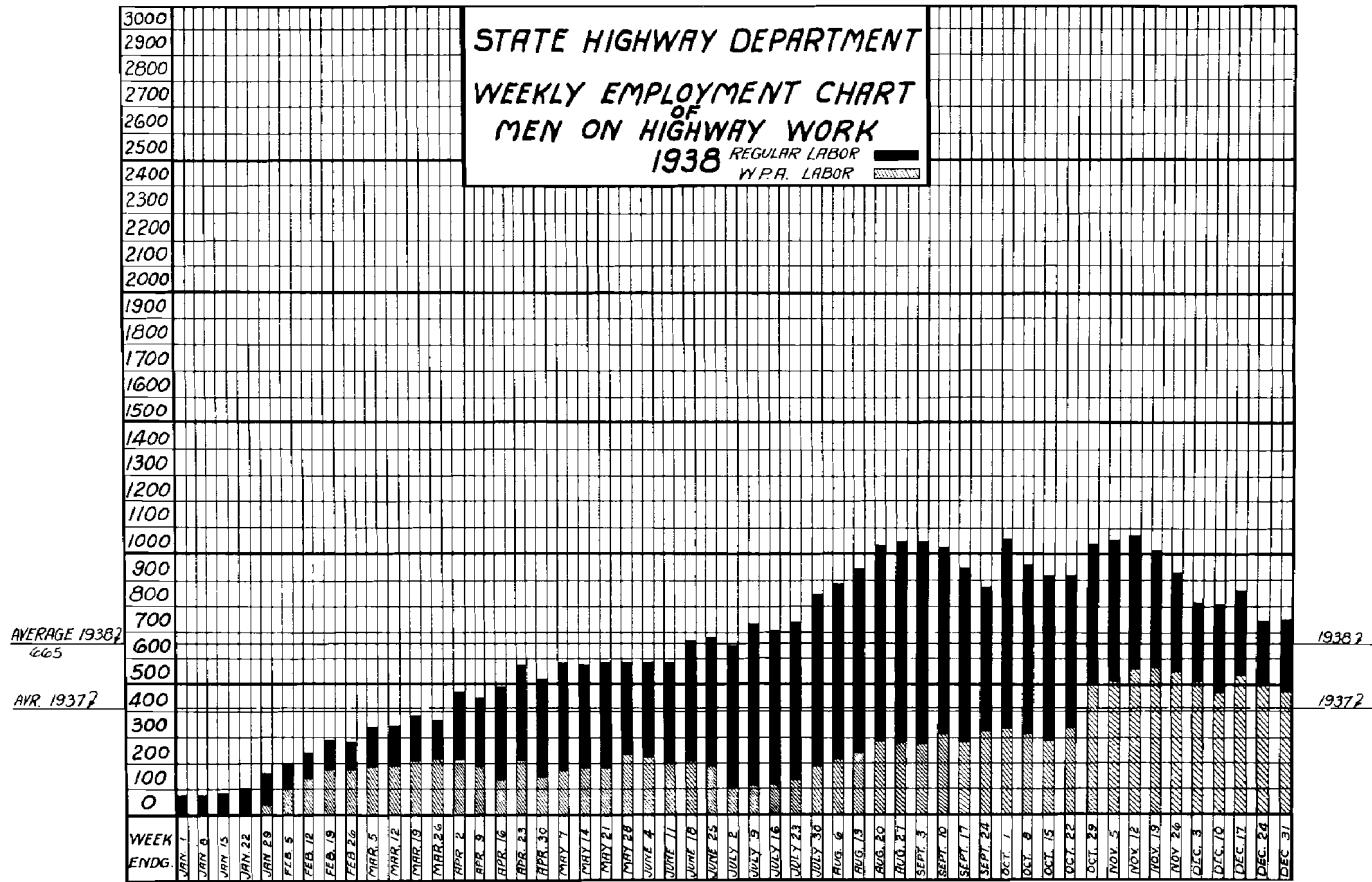
Milford to Harrington
Little Creek to Dover to Pearson's Corner, Route No. 8
Pearson's Corner to Everett's Corner, Route No. 44
Kenton to Maryland Line, Route No. 300
Kenton to Hartly to Maryland Line, Route No. 11
Bowers Beach Road
Little Creek to Leipsic, Route No. 9

Sussex County:

Millsboro to Gumboro, Routes No. 24 and No. 26
Harmon's School to Midway, Route No. 24
Selbyville to Millville, Route No. 17
Greenwood to Milford, Route No. 36
Seaford to Reliance, Route No. 20
Dagsboro to Shaftox Corner, Route No. 26
Williamsville to Fenwick Island

REHOBOTH AND BETHANY BEACH GROINS

The General Assembly of 1937 directed the Department to erect four additional groins at Bethany Beach. These were completed in the early summer of 1938 at a cost of \$30,295.50 and greatly improved the conditions at this sea-side resort. In the opinion of many competent observers the beach at Bethany was in better condition in 1938 than for many years.



As pointed out in the report of 1936, several of the old timber groins at Rehoboth Beach are practically destroyed and should be replaced by new ones.

I recommend that funds be made available by the General Assembly for the construction of four new groins, located respectively at Rehoboth Avenue, Surf Avenue, Deauville Beach, with the fourth about five hundred (500) feet farther to northward.

FEDERAL AID

Federal monies now allocated to Delaware amount to:

\$557,017.12 for primary highways,
fiscal year ending June 30, 1938;
\$73,210.00 for secondary highways,
fiscal year ending June 30, 1938;
\$609,375.00 for primary highways,
fiscal year ending June 30, 1939;
\$121,875.00 for secondary highways,
fiscal year ending June 30, 1939;
\$487,500.00 for primary highways,
fiscal year ending June 30, 1940;
\$73,125.00 for secondary highways,
fiscal year ending June 30, 1940,

or a total of \$1,922,102.12, which is available as soon as it can be matched with Delaware funds.

There are also Federal appropriations for grade crossing elimination and signalization totaling \$466,000.00.

The only obligation of the State and railroads in connection with the expenditure of these funds is to provide the necessary rights of way.

FINANCIAL OUTLOOK

The principal sources of the Department's income are the Motor Fuel Tax of 4 cents which annually produces slightly in excess of \$2,000,000, and the Motor Vehicle Fees which amount to approximately \$1,000,000, or a total of about \$3,250,000 per year.



4" CONCRETE WIDENING, NEW CASTLE TO WILMINGTON, NEAR BALDTON

Before any funds are available for construction certain fixed charges must be met. The budget for 1939 requires for the retirement and interest on County Highway Bonds assumed by the State, \$498,955, or 1 cent of the gas tax.

The maintenance of the county or secondary roads taken over by the State in 1935 required in 1938 slightly more than another cent.

The resumption by the counties of these obligations is unthinkable as real estate taxes would in much of the State be more than double the present rate.

The maintenance of the primary or State system of highways requires nearly another cent, or a third cent of the gas tax.

The interest and retirement of State Highway Bonds will require \$163,125.

The State Police receive the equivalent of one-half cent, or \$260,000, while the Motor Vehicle Department expends \$97,600, the Car Inspection Campaign, \$10,000, and the Administration of the Highway Department, \$61,000, which, with the previous item of \$163,000 for bond service, makes a total of \$591,000, or in excess of another cent, which accounts for the entire income received from the 4-cent gas tax.

This leaves the Motor Vehicle Fees of approximately \$1,100,000 for construction purposes. However, in 1939 there is a further obligation of \$300,000 to the General Fund, reducing the available amount for construction to \$800,000, which is barely sufficient to match the Federal Aid for one year.

Reductions in State Highway monies have already made the postponement of the highway construction program a necessity and the Delaware program is now lagging almost two years behind the Federal appropriations. In 1938, Delaware was barely able to complete the program in



SHOWING RELOCATION NORTH OF GLASGOW

time to avoid the loss of Federal funds. Even with several large contracts awarded within thirty days of the deadline, June 30th, the Department had scarcely enough funds to meet its contract obligations in the late fall.

If adequate highways are to be provided for present traffic needs, not only is it necessary to increase and develop existing highway facilities at many locations for reasons of safety and convenience, but a considerable mileage of the main trunk system which has been in service nearly twenty years, as pointed out in last year's report, will call for extensive repairs and reconstruction in the immediate future.

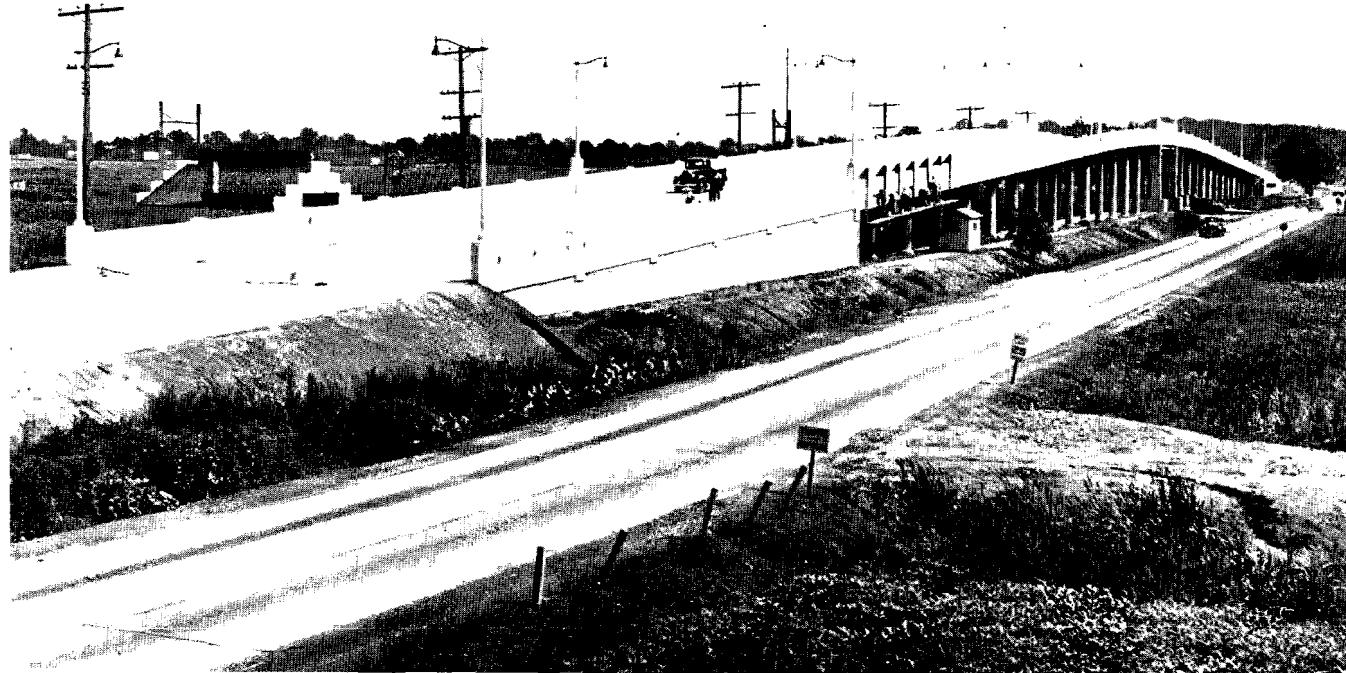
If legislation continues to draw on highway revenues for other purposes or reduces present sources of revenue, needed improvements and developments must be delayed.

In any discussion of motor taxation in Delaware, it should not be forgotten that Delaware maintains and constructs all highways and streets outside incorporated towns and cities, also that there is no personal property tax on motor vehicles in this State.

It is a significant fact that of the eighteen states having a 4-cent gas tax, Delaware produces the greatest revenue, \$31.98 per registered car, or 25.85% more than the average \$25.41 of the other seventeen states.

It is also interesting to note that of the ten states having a 5-cent gas tax, only three collect a greater amount per registered car than Delaware, while of the ten states having a 3-cent tax, De'aware collected 63% more per car instead of 33½%, as would be normally expected. In addition, every state in this group fell below the expected ratio.

These facts prove conclusively, I believe, that the present gas tax is not hampering Delaware's motor industry, but is striking proof that non-residents are paying their fair share of Delaware's gas tax.



GRADE ELIMINATION—OVERHEAD BRIDGE—WILMINGTON CAUSEWAY

It is likewise a pertinent fact that the average motor registration fee is less in Delaware than in two of the three adjoining states and in the third state motor vehicles are taxed as personal property in addition to the registration fees.

SAFETY

The shocking increase of traffic fatalities in the United States during 1937 apparently crystallized a movement already stirring beneath the surface, the result of years of earnest effort by safety groups, public officials, the motor industry and the motoring public. The new year had scarcely opened when reports of lessened fatalities began coming in. This happily continued throughout the year just ended with a reduction of approximately 8,000 in the traffic fatalities from the previous year.

Delaware has done her part in this dramatic achievement and has recorded a reduction of 30 deaths or -34% from the toll of 1937. The total of 58 fatalities on the highways and streets of the State outside of the City of Wilmington is the low record since 1929, being 2 lower than in 1935 and 3 less than in 1936.

While the very size of the reduction this year makes improbable equal decreases another year, the results are most heartening and should give encouragement to every worker in the cause of safety on the highways, in the belief that the reduction of these casualties is not a hopeless problem.

This fine record reflects the combined results of safety in construction, traffic control, law enforcement, public education; the splendid efforts of the Delaware Safety Council, and the generous assistance of the radio and press of the State and nation.

If fatalities are to continue to decrease, however, the general public must not forget that in the last analysis the responsibility for safety rests with the individual operator and pedestrian.



DUPONT BOULEVARD AT GEORGETOWN, SHOWING ROADSIDE BEAUTIFICATION

STATE POLICE

The increasing services of the State Police make it possible to sketch but briefly its varied and extensive activities, and it is necessary to study the attached reports to gain a comprehensive idea of the work performed during the year.

The important part taken by the State Police in the reduction of fatalities on the highways of the State is unquestioned. In carrying out their statutory duties during 1938 the officers of the force covered 2,009,626 miles on patrol duty; inspected 26,720 cars for defective lights and brakes; weighed 51,242 trucks; recovered 107 stolen cars; spent 11,599 hours on investigations and 18,785 hours on special duty; made 9,578 arrests for 119 different offenses; issued 57,337 reprimands and secured convictions resulting in fines totaling \$79,770.50.

Total arrests showed an increase of 15.4% and arrests for reckless driving 14.8% over the previous year. Total fines increased 7.0%. The greatest number of arrests for a single offense was 4,111 for reckless driving; arrests for larceny totaled 255. A complete tabulation of arrests and accidents is appended.

There have been important additions to the personnel and equipment during the year. A police training school was held during April and May and of the 700 applications, 24 were selected for active service, which with the addition of 4 civilian clerks allowed a more intensive patrol service than had previously been possible, with results that have been most satisfactory.

The force lost two men during the year by resignation and two by death. Corporal Clarence J. Buffington, who was sworn into the service of the Department on May 26th, 1924, died suddenly on March 26th, 1938. Corporal Buffington had just completed a long and important investigation



BEFORE AND AFTER CONSTRUCTION OF DIRT ROAD 363—KENT COUNTY

which resulted in the conviction and imprisonment for terms of twelve years of the two principals in the Claymont Bank robbery. In his death the State lost a loyal and efficient officer.

Private Howard S. Brittingham, who joined the force on June 16th, 1936, was instantly killed in an automobile accident, while off duty on May 15, 1938. Private Brittingham had made an excellent record during the period he served the Department.

A headquarters building for the State Police and New Castle County Highway Department is under construction at State Road, which will be ready for occupancy in the spring. It is a two-story brick structure which will furnish adequate and complete quarters for both of these organizations.

A new brick station building is under contract for the use of Station No. 5 at Bridgeville. On its completion all of the stations will be suitably housed.

Funds to the amount of forty-five (45) per cent were provided under Public Works Administration grants.

A 500-watt radio station was erected at State Road early in the year and the 250-watt transmitter was removed to the Dover Station, 150-foot broadcasting antennae were erected at both stations, and radio receivers installed in all police cars. These installations have greatly increased the efficiency and mobility of the patrols.

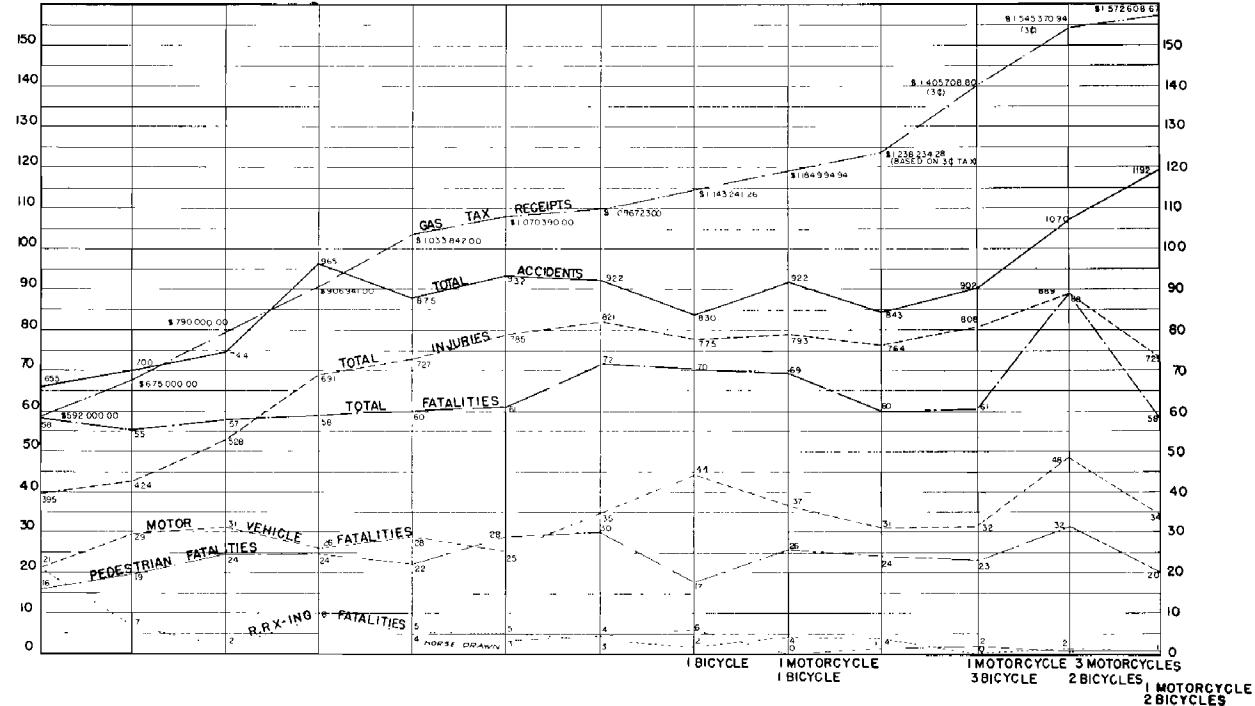
All of the recommendations in last year's report have been carried out or authorized during the year with the exception of the installation of the axle load scale on U. S. 40 and the truck scale on the Governor Printz Boulevard.

I wish to again recommend the construction of these scales.

To complete the communication system of the State Police, I recommend the installation of a 500-watt radio broadcasting station at Station No. 4, Georgetown.

STATE HIGHWAY DEPARTMENT
ACCIDENT CHART

ACCIDENTS
 PER FATALITY — 113 117 131 165 146 152 128 118 133 140 148 122 331
 MILES DRIVEN PER — 3,402,300 4,090,909 4,619,884 5,212,304 5,741,500 5,815,633 5,055,745 54,444,403 5,724,565 7,483,876 7,681,469 5,853,671 9,037,980
 FATALITY (%) — 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938



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

Wilmington Headquarters: Superintendent, Captain, 2 Lieutenants, 2 Privates, 1 Statistician and 1 Clerk.

Station No. 1, Penny Hill: 1 Sergeant, 3 Corporals, 15 Privates and 1 Clerk.

Station No. 2, State Road: 1 Sergeant, 3 Corporals, 18 Privates and 1 Clerk.

Station No. 3, Dover: 1 Lieutenant, 1 Sergeant, 3 Corporals, 10 Privates and 1 Clerk.

Station No. 4, Georgetown: 1 Sergeant, 3 Corporals, 8 Privates and 1 Clerk.

Station No. 5, Bridgeville: 1 Sergeant, 3 Corporals, 9 Privates and 1 Clerk.

At the Dover garage, 3 mechanics care for all Police motor equipment.

A total of 97, of which 85 are in uniform.

ARRESTS FOR THE YEAR 1938

Accessory	3
Adultery	3
Aiding and abetting	3
Allowing body to extend over side	7
Allowing an unlicensed person to operate	125
Allowing an unregistered car to be operated	6
Arson	9
Assault	14
Assault and battery	198
Assault felonious	6
Assault to murder	8
Assault to rape	1
Attempt to do bodily harm	1
Attempt to rape	1
Bastardy	1
Breach of peace	12
Breaking and entering	34
Carrying concealed a deadly weapon	16
Contempt of court	1

Defective brakes	208
Desertion and non-support	5
Desertion (Army)	3
Discharging firearm	3
Disorderly conduct	240
Displaying another's license	29
Disregarded stop sign	453
Disturbing the peace	2
Drug addict	1
Drunk and disorderly	235
Embezzlement	4
Exceeding legal height	13
Exceeding legal length	7
Exceeding legal width	4
Exceeding registered weight	433
Failed to report accident	1
Failed to signal	6
Failed to stop upon request	12
Forgery	8
Fugitive from justice	22
Gambling	20
Held as witness	58
Highway robbery	2
Hitch hiking	13
Horse drawn vehicle no light	1
Improper lights	58
Improper tags	51
Incorrigible	1
Insane	1
Interfering with officer	4
Interfering with operator	12
Juvenile delinquent	1
Keeping disorderly house	2
Larceny	255
Larceny as bailee	2
Leaving accident	33
Lending license plates	4
Lending operator's license	23
Making false statement	5
Making threats	23
Malicious mischief	6

Manslaughter	8
Murder	4
No chauffeur's license	89
No clearance lights	12
No flares	45
No horn	22
No light on end of load	2
No mercantile license	2
No mirror	53
No muffler	25
No operator's license	855
No permit	2
No photograph on paid driver's license	5
No windshield wiper	4
Obtaining goods under false pretenses	1
Obtaining money under false pretenses	3
Operating after revocation or suspension of license	15
Operating unregistered car	269
Operating while intoxicated	172
Overloaded axle	239
Overloaded semi-trailer	207
Overloaded trailer	3
Overloaded truck	126
Parking no lights	20
Parking on concrete	22
Passing counterfeit money	1
Passing traffic (red) light	57
Passing or issuing worthless check	27
Pedestrian no light	2
Playing crap	25
Pointing firearm	1
Policy writing	1
Possession of stolen goods	6
Practicing medicine without license	2
Rape	5
Receiving stolen goods	28
Reckless driving	4,111
Resisting arrest	3
Robbery	2
Running over fire hose	1
Selling car no title	2
Sending threatening letters	1
Sex crimes	3



CAMDEN TO WOODSIDE CONCRETE RESURFACING—UNDER CONSTRUCTION



CAMDEN TO WOODSIDE CONCRETE RESURFACING—FINISHED PAVEMENT

Taking car without owner's consent	30
Tampering with automobile	16
Throwing glass on highway	2
Throwing rubbish on highways	8
Trespassing	121
Using siren	1
Using spot light	1
Vagrancy	114
Violated Coal Law	6
Violated Dyer Act	11
Violated Health Laws	1
Violated Learner's permit	24
Violated Liquor Laws	35
Violated Parole	1
Violated School Laws	1
Wife beating	10
Total number arrests	9,578
Total number reprimands	57,337
Total number trucks weighed	51,242
Total number miles patrolled	2,009,626
Total number cars inspected for lights and brakes.....	26,720
Total number hours spent on duty	212,120
Total number hours spent on investigation	11,599
Total number hours spent on Special Duty	18,785
Total number stolen cars recovered	107
Total number school children addressed on safety.....	2,300

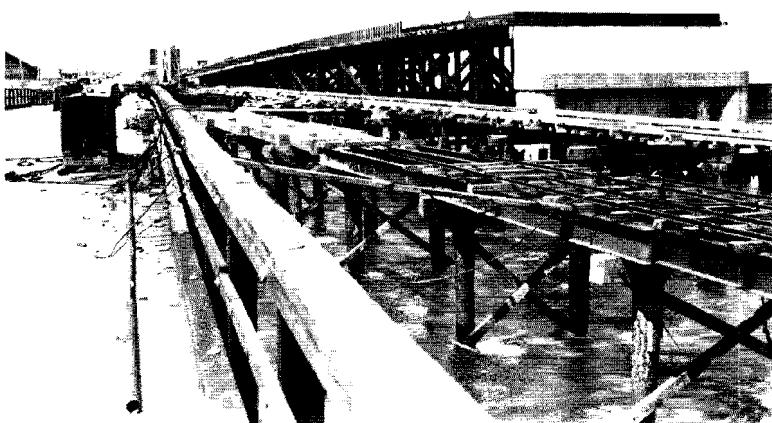
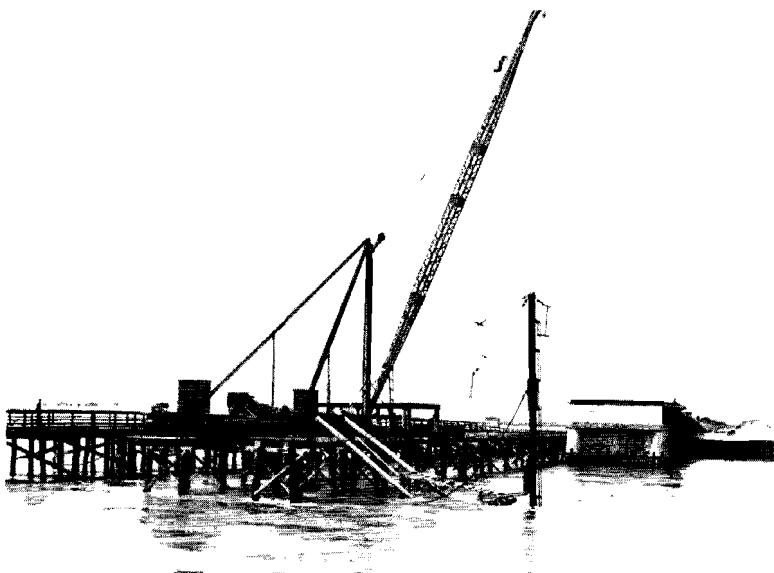
ACCIDENTS FOR THE YEAR 1938

Total number accidents	1192*
Total number fatal accidents	50
Total number persons killed	58
Total number personal injury accidents	471
Total number persons injured	729
Total number property damage accidents	687*
Total estimated property damage	\$190,995.00*

*In August, 1938, the practice of recording all accidents, regardless of property damage, was begun. Previous to this only accidents involving personal injury or property damage in excess of \$50.00 were tabulated.

Fatalities by Counties

New Castle	29	or	50.0%
Kent	15	or	25.9%
Sussex	14	or	24.1%
<hr/>			
Total.....	58		



VIEWS OF CHARLES W. CULLEN BRIDGE, INDIAN RIVER INLET, UNDER CONSTRUCTION

Type of Accident**In Collision with:**

	Total	Fatal	Non-Fatal
Pedestrian	76	20	56
Another automobile	637	15	622
Animal or horse drawn vehicle	30	1	29
Railroad train	11	1	10
Street car	4	..	4
Motorcycle	6	1	5
Fixed object	231	13	218
Bicycle	16	2	14
Non-collision	180	5	175
Miscellaneous	1	..	1
 Totals.....	 1192	 58	 1134

Cause:

	Total	Fatal	Non-Fatal
Reckless driving	324	15	309
Drove off roadway	164	5	159
Operator drinking	139	8	131
View obstructed	139	4	135
Skidding	110	..	110
On wrong side of road	98	2	96
Exceeding speed limit	94	5	89
No chains on ice or snow	77	2	75
Violated right of way	70	..	70
Failed to signal	58	..	58
Driver asleep	57	4	53
Disregarded stop sign	53	2	51
Parking on roadway	37	1	36
Following too closely	36	..	36
Pedestrian careless (Jay walking)	31	10	21
Cutting in	29	..	29
Pedestrian walking on highway	29	10	19
Defective brakes	27	..	27
Puncture or blow-out	26	1	25
Unclassified mechanical defects	22	2	20
Slowing down or stopping	22	..	22
Glaring headlights	21	..	21
Operator confused	17	..	17
Pedestrian not crossing at intersection	16	3	13
Hit and run	15	1	14
Defective steering mechanism	14	..	14
Operator had physical defect	13	1	12
One or both headlights out	12	2	10

	Total	Fatal	Non-Fatal
Pedestrian coming from behind parked car	11	1	10
Pedestrian had been drinking	11	4	7
Pedestrian confused by traffic	11	3	8
Tail light out or obscured	10	..	10
Child playing in roadway	8	1	7
Pedestrian—view obstructed	5	..	5
Passing on curve or hill	4	1	3
Passing on wrong side	4	..	4
Pedestrian crossing at intersection...	4	1	3
Pedestrian—getting on or off street car	2	2	..
Pedestrian—at work on car on roadway	2	..	2
Pedestrian had physical defect.....	2	..	2
Car ran away—no driver	1	..	1
Not stated	28	2	26

Driver's Sex:

	Total	Fatal	Non-Fatal
Male	1685	55	1630
Female	161	6	155
Not stated	16	1	15
Totals.....	1862	62	1800

Driver's Age:

	Total	Fatal	Non-Fatal
Under 20 years	169	5	164
20 to 29 years	699	22	677
30 to 49 years	670	21	649
50 to 64 years	236	9	227
65 years and over	58	3	55
Not stated	30	2	28
Totals.....	1862	62	1800

Driver's Experience:

	Total	Fatal	Non-Fatal
Less than 3 months	27	1	26
3 to 6 months	19	1	18
6 to 12 months	13	2	11
1 year or more	1747	51	1696
Not stated	56	7	49
Totals.....	1862	62	1800

Driver's Residence:

	Total	Fatal	Non-Fatal
Delaware driver	1336	44	1292
Out of State driver	526	18	508
Totals.....	1862	62	1800

Hour of Occurrence:

	Total	Fatal	Non-Fatal
12 to 1 A. M.	61	2	59
1 to 2 A. M.	52	2	50
2 to 3 A. M.	23	..	23
3 to 4 A. M.	25	1	24
4 to 5 A. M.	15	1	14
5 to 6 A. M.	28	3	25
6 to 7 A. M.	34	2	32
7 to 8 A. M.	36	1	35
8 to 9 A. M.	30	2	28
9 to 10 A. M.	41	1	40
10 to 11 A. M.	54	1	53
11 to 12 A. M.	40	..	40
12 to 1 P. M.	46	..	46
1 to 2 P. M.	64	2	62
2 to 3 P. M.	52	2	50
3 to 4 P. M.	62	1	61
4 to 5 P. M.	79	6	73
5 to 6 P. M.	75	4	71
6 to 7 P. M.	76	3	73
7 to 8 P. M.	69	4	65
8 to 9 P. M.	62	4	58
9 to 10 P. M.	48	2	46
10 to 11 P. M.	49	2	47
11 to 12 P. M.	63	4	59
Not stated	8	..	8
Totals.....	1192	50	1142

Light Conditions:

	Total	Fatal	Non-Fatal
Daylight	603	22	581
Dusk	40	2	38
Artificial light—good	77	2	75
Artificial light—poor	60	5	55
Darkness	412	19	393
Totals.....	1192	50	1142

Day of Occurrence:

	Total	Fatal	Non-Fatal
Sunday	242	10	232
Monday	134	8	126
Tuesday	123	5	118
Wednesday	110	..	110
Thursday	171	9	162
Friday	163	4	159
Saturday	249	14	235
Totals.....	1192	50	1142

Road Location:

	Total	Fatal	Non-Fatal
Between intersections	31	1	30
Rural intersection	254	5	249
Straight road	589	28	561
Driveway	67	..	67
Curve	168	9	159
Street intersection	61	3	58
Railroad crossing	9	1	8
Street car crossing	1	..	1
Bridge	12	3	9
Totals.....	1192	50	1142

Road Surface:

	Total	Fatal	Non-Fatal
Dry surface	819	40	779
Wet surface	267	9	258
Muddy surface	8	..	8
Snowy surface	46	..	46
Icy surface	51	1	50
Not stated	1	..	1
Totals.....	1192	50	1142

At Railroad:

	Total	Fatal	Non-Fatal
Guarded crossing—automatic signal..	1	..	1
Unguarded crossing	8	1	7
Not stated	2	..	2
Totals.....	11	1	10

Weather Conditions:

	Total	Fatal	Non-Fatal
Clear	780	36	744
Cloudy	115	4	111
Fog or mist	72	4	68
Rain	177	5	172
Snow	47	1	46
Smoke or dust	1	..	1
 Totals.....	1192	50	1142

Type of Road Construction:

	Total	Fatal	Non-Fatal
Dual	206	6	200
Non-dual	986	44	942
 Totals.....	1192	50	1142

Type of Vehicle Involved:

	Total	Fatal	Non-Fatal
Passenger car	1497	50	1447
Light delivery car	25	1	24
Bus	6	..	6
Motorcycle	13	1	12
Truck	321	10	311
Wagon	10	1	9
All other vehicles	19	1	18
Not stated	9	..	9
 Totals.....	1900	64	1836

Action of Pedestrian**Contributing to Accident:**

	Total	Fatal	Non-Fatal
Getting on or off street car.....	2	2	..
Crossing intersections	4	1	3
In street not at intersection.....	16	3	13
Children playing in roadway	8	1	7
Coming from behind parked car.....	11	1	10
At work on car on roadway	2	..	2
Walking along or on highway	29	10	19
Miscellaneous	4	2	2
Not stated	1	..	1
 Totals.....	77	20	57

Condition of Pedestrian:

	Total	Fatal	Non-Fatal
Had been drinking	11	4	7
Had physical defect	2	..	2
Was confused by traffic	11	3	8
View obstructed	5	..	5
Careless	31	10	21
Totals.....	60	17	43

RECOMMENDATIONS

For your consideration during the coming year, I wish to submit the following recommendations:

1. That surveys and studies be made for adequate connections between the Governor Printz Boulevard, the Philadelphia Pike and the Ridge Road, U. S. 13, at Naaman's near the Pennsylvania Line, in order to eliminate the dangerous and congested conditions now existing and to insure a safe and orderly flow of traffic at that point.
2. That a highway be constructed connecting the new dual highway at Elsmere with the Lancaster Pike via Cleveland Avenue to provide a suitable route from the City of Wilmington westward, avoiding the numerous railroad grade crossings at Elsmere Junction and the congested traffic of Union Street, an improvement that has long been needed.
3. That provision be made for the paving of another roadway on the Governor Printz Boulevard from Edge Moor to Claymont, making this a dual highway, as soon as the grading now being done by WPA forces is completed, and the addition of two more lanes from the Eleventh Street Bridge to Edge Moor.
4. In view of the overcrowding of the offices in the State buildings at the capital and the need of more space by the State Highway Department, I recommend that consideration be given to the construction of a State Highway

Building in Dover, in accordance with the Capitol Commission plan. The present quarters may then be released for the use of other State departments.

5. I further recommend that the policy of progressive improvement of secondary roads be continued, subject to a budget allotment of funds for such work to each county as a part of the annual construction program.

DELAWARE STATE HWY. MILEAGE 1938

TYPE	NEW CASTLE	KENT	SUSSEX	TOTALS
CONCRETE HIGHWAYS				
(DUAL) DIVIDED HIGHWAYS (4-7 LANE)	42.92	10.53		53.45
TWO LANE HIGHWAYS	128.70	210.98	288.75	628.43
NINE FOOT & TEN FOOT LANES	24.90	62.97	49.65	137.52
BRICK & CONCRETE HIGHWAYS				
BRICK & CONCRETE (4 LANE)	6.39			6.39
BRICK	0.40			0.40
MACADAM HIGHWAYS				
BITUMINOUS MACADAM	380.90	21.89	12.99	415.78
COUNTY - 10 FOOT			48.15	48.15
BITUMINOUS CONCRETE				
STONE BASE	6.10		6.27	12.37
CONCRETE BASE	15.89			15.89
ASPHALT				
SAND ASPHALT			28.93	28.93
SLAG				
SURFACE TREATED	47.50	35.82	121.98	205.30
TRAFFIC BOUND	19.40	130.99	95.59	245.98
DIRT OR GRAVEL				
DIRT	21.00	260.84	930.37	1212.21
GRAVEL	295.70	330.37	275.00	901.07
TOTALS	989.80	1064.39	1857.68	3,911.87

9/-/38

TABULATION OF CONTRACTS AWARDED DURING 1938

Cont. No.	Location	Estimated Cost	Date of Award	Contractor	Length in Miles	Type of Roadway
503	Glasgow-Newark	\$183,774.00	2/ 9/38	Vincent Schiavi, Wilmington, Del.	4.411	20' & 24' Conc.
522	Kenton-Smyrna	49,211.00	3/ 7/38	Wilson Contr. Co., Wilmington, Del.	6.169	4' Conc. Wid.
599	Corbit-Bear	19,272.00	4/ 2/38	Angelo Citro, Wilmington, Del.	2.807	4' Conc. Wid.
594	Hartly School Sidewalk	1,477.00	4/ 8/38	E. F. Hammond, Delmar, Del.		4' Conc. Sdw.
596	Dover, Division and Forest Sts., Sidewalk	7,339.00	4/ 8/38	D. E. O'Connell & Sons., Wilmington, Del.		4' Conc. Sdw.
627	Kent Co. Bridges Nos. 363A & 186A	2,632.10	5/ 7/38	Spear Jones & Co., Dover, Del.		Creo. Timber
524	Burrsville-Harrington	96,404.65	6/ 2/38	Phillips Bros., Salisbury, Md.	9.586	4' Conc. Wid.
598	New Castle to Rogers' Corner	43,679.70	6/ 2/38	D. E. O'Connell & Sons., Wilmington, Del.	3.757	4' Conc. Wid. & Conc. Patch
631	2 Timber Bridges, Kent County	1,731.00	6/ 2/38	Spear Jones & Co., Dover, Del.		Creo. Timber
632	Delmar-Laurel	18,092.00	6/ 2/38	M. J. McDermott, Georgetown, Del.	7.156	16' Conc. Patch.
514	Wrangle Hill-Tybont's Corner	73,368.80	6/17/38	Wilson Contr. Co., New Castle, Del.	3.426	20' Conc. Pavt., 4' Conc. Wid.,
604	Dagsboro-Clarksville	91,868.27	6/23/38	W. W. Truitt, Lincoln, Del.	7.490	22' Bit. Con. Surf.
591	Laurel-James' Camp	27,865.80	9/15/38	George & Lynch, Dover, Del.	6.867	4' Conc. Wid.
423	Phillips' Hill-Pusey's X-Rds.	17,234.10	9/15/38	Old Line Const. Co., Chestertown, Md.	4.052	Traffic Bound
656	East North Street, Dover	5,552.00	9/23/38	P. J. O'Connell, Wilmington, Del.	0.079	Traffic Bound
657	Alapocas Road at Augustine Cutoff	3,260.70	9/23/38	R. H. Johnson Co., Wilmington, Del.	0.042	Bit. Cone.
658	Conrad School Sts., Woodcrest	10,155.55	9/28/38	Wilson Contr. Co., New Castle, Del.	0.341	Bit. Cone.
421	Concord-Middleford Road	14,930.75	11/ 2/38	Walter Roach & Sons, Georgetown, Del.	1.942	Traffic Bound
605	Packing House Cor.-Md. Line	3,142.80	11/ 2/38	Walter Roach & Sons, Georgetown, Del.	1.231	Traffic Bound
667	Two Timber Bridges, Kent County	2,961.20	12/16/38	W. W. Truitt, Lincoln City, Del.	2.831	Creo. Timber
383	Dixon's Cor.-Postles' Cor.	13,385.60	11/26/38	George & Lynch, Dover, Del.		Stab. Surface
662	Police Sta. & Garage, Bridgeville	10,820.00	12/19/38	J. A. Bader & Co., Wilmington, Del.		
668	Market St. Extension, Smyrna	10,164.70	12/21/38	Old Line Constr. Co., Chestertown, Md.		
638	Slag, Sussex	14,152.00	6/ 2/38	Phila. Slag Co., Swedeland, Pa.	0.120	Bit. Cone.
602A	Dover Police Station No. 3, Roadside Beautification	3,149.25	11/ 7/38	W. H. Doyle, Inc., Berwyn, Pa.	0.485	
617A	Rogers' Cor. Intersection, Beaufitf.	156.00	11/ 7/38	Del-Mar-Va Nurseries, Lincoln, Del.		
634	Applying Bit. Material	5,575.50	6/13/38	Asphalt Surf. Co., Baltimore, Md.		
612A	Landscaping Fort Christina Park	3,301.08	4/19/38	Del-Mar-Va Nurseries, Lincoln, Del.		
155B	Ornamental Lights for Silver Lake Bridge	1,150.00	1/13/38	Frederick Grndy Iron Works, Phila., Pa.		
481	Garage & Shed at Georgetown	5,994.00	3/ 3/38	McIntosh Constr. Co., Newark, Del.		
612	Fort Christina Park Development	166,600.00	3/ 4/38	Eastern Engineering Co., Atlantic City, N. J.		

TABULATION OF CONTRACTS AWARDED DURING 1938—(Continued)

Cont. No.	Location	Estimated Cost	Date of Award	Contractor	Length in Miles	Type of Roadway
601	Building Addition at Dover	1,839.91	3/ 3/38	E. F. Hammond, Delmar, Del.		
543	Omar Bridge & Approaches	16,851.35	4/ 2/38	Old Line Constr. Co., Chestertown, Md.	0.308	Composite Br., Conc. Approach
603	Georgetown-Bridgeville	82,637.00	4/15/38	Walter Roach & Sons, Georgetown, Del.	10.965	4' Conc. Wid.
626	Bituminous Conc., New Castle Co.	10,250.00	4/ 8/38	Delaware Asphalt Co., Wilmington, Del.		
512	Woodside-Camden	121,774.00	5/16/38	Old Line Constr. Co., Chestertown, Md.	3.736	4' Conc. Wid., 22' Conc. Pavt.
525	Christiana to Newark	23,653.40	5/16/38	Julian T. Jones, Wilmington, Del.	3.065	4' Conc. Wid., Cone. Patching
630	Traffic Bound Slag	19,668.00	5/14/38	Duquesne Slag Prod. Co., Pittsburgh, Pa.		
633	Furnishing Asphaltic Material	41,418.00	6/ 2/38	Atlantic Refining Co., Philadelphia, Pa.		
635	Stone Chips, New Castle	21,875.00	6/ 6/38	Warner Co., Wilmington, Del.		
637	Reinf. Conc. Requirements	12,313.20	6/ 6/38	Wilson Cont. Co., New Castle, Del.		
640	Creo. Lumber and Piles for Sussex County	10,650.00	6/15/38	Marvel Package Co., Laurel, Del.		
532	Lake Bridge, Rehoboth	16,882.60	7/19/38	E. F. Hammond, Delmar, Del.		
597	Elsmere-Price's Corner	156,106.50	7/13/38	A. Petrillo Co., Wilmington, Del.	1.266	Comp. Br., 24' Roadway
550	Fenwick Island-Bethany Beach	29,570.00	8/ 5/38	Shert & Bennett, Bethany Beach, Del.	6.021	22' Conc. Dual
648	Rough Sheathing Lumber (Sussex)	1,152.45	8/ 5/38	Chas. A. Wilkins & Son, Georgetown, Del.		Roadway Shaping
602	Dover-Police Sta. No. 3 Lighting	5,197.11	8/15/38	Wm. E. Snell, Vineland, N. J.	0.632	Lighting
616	Dobbinsville Sidewalk, New Castle	4,055.50	7/16/38	Short & Walls, Middletown, Del.	0.582	4' Cone.
653	Heavy Duty 35-ton Trailer	3,522.00	9/14/38	Edelen & Boyer Co., Philadelphia, Pa.		
617	Rogers' Cor. Intersection Lighting	5,587.00	11/ 7/38	Olivere Paving Co., Wilmington, Del.		
666	Sidewalks & Drives, Hall of Records	2,725.00	11/17/38	J. A. Bader & Co., Inc., Wilmington, Del.		Lighting
D-2	500-Watt Radio Sta. at State Road	9,485.00	4/ 6/38	Transmitter Equipment Co., New York City		
628	2-½ Yard Cranes	16,546.00	5/12/38	General Excavator Co., Marion, Ohio		
629	2 Motor Graders	6,520.00	5/12/38	D. C. Elphinstone Co., Inc., Baltimore, Md.		
663	Testing Laboratory, Dover	49,438.00		Robert F. Engler, Inc., Wilmington, Del.		
661	Headquarters Bldg., State Road	36,282.00		J. A. Bader & Co., Wilmington, Del.		
641	Gasoline 1938-39	88,000.00	7/ 7/38	Atlantic Refining Co., Philadelphia, Pa.		
642	Motor Oil & Grease 1938-39	5,273.35	7/ 7/38	Atlantic Refining Co., Philadelphia, Pa.		
636	Stone Chips, Kent & Sussex	40,112.00	7/20/38	General Crushed Stone Co., Easton, Pa.		
664	Ashland Brdg. & Approaches	28,507.20	12/24/38	Olivere Pvg. & Constr. Co., Wilming- ton, Del.		Girder Bridge, 18' Bit. Conc. Approaches

NEW CASTLE COUNTY
MILEAGE AND TYPES ADVERTISED AND AWARDED DURING 1938

Cont.	Location	Concrete 22-Ft. Dual	20-Foot Concrete	4-Foot Concrete Widening	22-Foot Bit. Concrete	30-Foot Bit. Concrete	Concrete Sidewalks
597	Price's Corner-Elsmere	1.266					
503	Glasgow-Newark		4.411				
514	Wrangle Hill-Tybout's Corner	1.485			1.934		
658	Conrad School Streets					0.341	
598	New Castle-Rogers' Corner		0.598	3.159			0.27
599	Corbit-Bear			2.807			
657	Alapocas Road Approach					0.042	
525	Christiana-Newark			3.066			
616	Dobbinsville Sidewalks						0.582
		2.751	6.724	9.032	1.934	0.383	0.852

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- 612 Fort Christina Park Construction
- 612A Fort Christina Park Landscaping
- 626 Bituminous concrete for maintenance
- 617 Rogers' Corner Intersection Lighting
- 617A Rogers' Corner Landscaping
- D-2 Radio Station Police Headquarters
- 661 Headquarters Building, State Road, P. W. A.
- 664 Ashland Bridge and Approaches, P. W. A.
- 633 Furnishing asphalt State-wide maintenance (New Castle County)
- 635 Furnishing stone chips State-wide maintenance (New Castle County)
- 637 Reinforced concrete pipe (State-wide maintenance (New Castle County))
- 634 Applying asphalt State-wide maintenance (New Castle County)
- 14 Railroad signal crossing protection installations

KENT COUNTY
MILEAGE AND TYPES ADVERTISED AND AWARDED DURING 1938

Cont.	Location	Resurfacing Concrete 22-Foot	30-Foot Bit. Concrete	56-Foot Bit. Concrete	4-Foot Concrete Widening	16-Foot Stab. Material	16-Foot Traffic Slag	4-Foot Concrete Sidewalks	6-Foot Brick Sidewalk
512	Woodside-Camden	3.736							
522	Kenton-Smyrna					6.169			
524	Burrsville-Harrington					9.586			
656	E. North Street, Dover		0.079						
668	Market St. Extension, Smyrna			0.120					
383	Dixon's Cor.-Postle's Cor.					2.831			
596	Division-Forest St., Dover						0.559		
594	Hartly School Sidewalk						0.208		
666	Hall of Records & E. North St., Dover							0.15	
		3.736	0.079	0.120	15.755	2.831	0.767	0.15	

631 Timber Bridges
627 Timber Bridges
667 Timber Bridges
602 Lighting Silver Lake Bridge to Police Station Int.
601 Garage Storage Addition, Dover
155B Ornamental Lights Silver Lake Bridge, Dover
663 Testing Laboratory Building, Dover (P. W. A.)
602A Landscaping Silver Lake Bridge, Dover
633 Furnishing Asphaltic State-wide maintenance (Kent County)
634 Applying Asphaltic State-wide maintenance (Kent County)
638 Slag chips State-wide maintenance (Kent County)
630 Slag for State maintenance (Kent County)

SUSSEX COUNTY
MILEAGE AND TYPES ADVERTISED AND AWARDED DURING 1938

Cont.	Location	18-Foot Concrete	4-Foot Widening	16-Foot Traffic Slag	Concrete Roadway Patching	Grading
632	Delmar-Laurel				7.156	
604	Dagsboro-Clarksville		7.490			
603	Georgetown-Bridgeville			10.965		
543	Omar Bridge and Approaches	0.308				
550	Fenwick Island-Bethany Beach					6.021
591	Laurel-James Camp			6.867		
423	Phillips' Hill-Pusey's Cross Roads.....			4.052		
421	Concord-Middleford			1.942		
605	Packing House Road			1.231		
532	Lake Bridge (Sussex County)					
600	Charles W. Cullen Bridge					
		0.308	18.455	13.992	7.156	6.021

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- 633 Furnishing asphaltic material State-wide maintenance (Sussex)
- 634 Applying asphaltic material State-wide maintenance (Sussex)
- 638 Furnishing slag chips State-wide maintenance (Sussex)
- 636 Furnishing stone chips State-wide maintenance (Sussex)
- 637 Furnishing reinforced concrete pipe State-wide maintenance (Sussex)
- 640 Furnishing creosoted timber piles and lumber (Sussex County) maintenance
- 648 Furnishing rough sheathing lumber (Sussex County) maintenance
- 630 Furnishing slag (Sussex County) maintenance
- 481 Garage shed (Georgetown)
- 662 Police Station, Bridgeville, P. W. A.

FINANCIAL STATEMENT

The Secretary has presented a detailed report of the financial transactions for the fiscal year ending June 30, 1938. There is attached a summarized statement of the Income and Expenditures of the Department for the period beginning January 1, 1938, and ending December 31, 1938.

INCOME

Balance, December 31, 1937	\$ 695,813.32
Motor Vehicle Fees	1,018,237.30
Titling Fees	46,084.95
Motor Fuel Tax	2,096,811.56
Motor Fuel Dealers and Distributors License	2,756.06
State Police Fines	79,770.50
Federal Aid	880,225.34
Miscellaneous Income	15,893.72
Car Inspection Campaign	4,916.00
Total Income.....	\$4,840,508.75

EXPENDITURES

Administration	\$ 54,452.25
Fixed Charges:	
Maturities—State Highway Refunding Bonds	100,000.00
Maturities—New Castle County Bonds	90,000.00
Maturities—Kent County Bonds	105,000.00
Maturities—Sussex County Bonds	75,000.00
Interest—New Castle County Bonds	92,742.50
Interest—Kent County Bonds	62,062.50
Interest—Sussex County Bonds	79,500.00
Interest—State Highway Department Bonds	64,250.00
Maintenance	945,111.22
Plant and Equipment	65,948.02
State Police	228,560.97
Construction	2,155,920.92
Car Inspection Campaign	21,534.25
Motor Vehicle Department	97,000.88
Motor Fuel Tax Division	11,181.33
Motor Fuel Tax Adjustment	26,473.14

Expenditures by Legislative Enactments:	
Loans to General Fund	200,000.00
Public Works Administration Fund Transfer	82,354.00
 Total Expenditures	\$4,557,091.98
Balance, December 31, 1938	\$283,416.77

There were outstanding on December 31, 1938, contracts amounting to \$586,654.47, of which the Department's obligations totalled \$350,715.18.

In conclusion I wish to express my appreciation of the support and advice which I have received during the year from His Excellency, the Governor, the Chairman and the Members of the Department; also, to thank my associates for their willing and valued assistance.

Respectfully submitted,

W. W. MACK

Chief Engineer