

REPORT OF THE CHIEF ENGINEER
DELAWARE STATE HIGHWAY
DEPARTMENT

July 1, 1956 to July 1, 1957

Dover, Delaware

The Chairman and Members
State Highway Department
Dover, Delaware

Gentlemen:

The activities of the Department during the period 1 July 1956 through 30 June 1957 are outlined in the accompanying report. Increased service to the public has been the central objective to which our operations during the past year have been geared and this report reflects the efforts which have been made to fulfill that objective.

Fiscal year 1957 was one of increased activity within the Department. Funds available for construction and maintenance were utilized to the fullest extent as evidenced by the relatively small balances remaining in these accounts at the close of the year. The Dirt Road Program was accelerated in an effort to place it on schedule. The enactment of the bill authorizing the program at a comparatively late date in the construction season of 1955 placed these projects behind schedule and required extensive programming to bring it up to date. As noted in the report of last year the initial funds made available for this program by the Legislature will not be sufficient to hard surface all dirt roads in the State. At such time as the funds currently authorized are expended, which it is anticipated will be in the early part of fiscal 1959, additional funds must be provided by legislative action if we are to continue the program.

As indicated in a later section of the report, the expanded programs have been accompanied by increases in strength during the year. It is felt that the services provided by the Department and therefore the required strength of the Department should progress in a relationship to usage as represented potentially by population in-

creases, mounting motor vehicle registrations, and changes in vehicle-miles travelled. A comparison of the terminal years of the period 1952 through 1957 along these lines discloses some interesting figures. During the period in question the population of the State increased 23%, advancing from 344,000 to 423,000 persons; during the same years registrations for motor vehicles advanced from 122,000 to 173,000, a gain of 42%. Similarly the vehicle-miles have increased by 41% during these years. Personnel strength, required to furnish increased engineering services resulting from expanded usage factors, has been augmented only 16% during the five years, increasing from 899 employees in 1952 to 1044 in June 1957. In view of the extent to which the responsibilities of the Department have broadened, this increase in the number of employees is considered well within bounds.

Referring again to our increasing activities, mention should be made of the Public Works aspect of the operation of the Department. Each year brings new projects in this field and as you may note later in the report, this year has followed the same trend. The first six months of the current session of the General Assembly has witnessed the addition of a number of projects in this category.

Increased endeavor in the field of research has been experienced. The position of Research Engineer has been established and studies have been conducted in conjunction with such agencies as the Water Pollution Commission, the University of Delaware, the Highway Research Board, Delaware River Basin Resources Survey and others.

It is felt that fiscal year 1957 has been one of accomplishment. Facilities for highway travel in the State were certainly improved, as exemplified by the extensive construction program which included the completion of the final link of U. S. Route 13, thereby providing a divided highway throughout the length of the State; the surfacing of 230.49 miles of dirt road and the expansion of maintenance services. At this point it seems appropriate to note that public recognition of the efforts of the Department has been most gratifying. Favorable comments received relative to projects undertaken or completed culminated in the public expression of appreciation, typified by the public ceremonies scheduled by citizens of Smyrna in connection with the opening of Commerce Street.

A brief glimpse of the future indicates continued expansion in services including the construction of a free-

way system through New Castle County, plus further improvements throughout the entire State on all roadway systems. Construction recommendations representing expenditures of \$257,518,500, exclusive of the Interstate System, are listed in the body of the report.

With the completion of the fiscal year I wish to express my appreciation for the cooperation and support tendered to me by the Members of the Department. I also wish to express my appreciation to the members of our organization at all levels for the part they have played in making this a successful year.

General Recommendations

A review of the specific recommendations submitted in the last report discloses that some of the desired ends have been attained, while other items have not been accomplished. Again this year recommendations, based on observation and experience, are submitted for consideration and it is strongly urged that they be adopted.

1. The first recommendation is one previously submitted and endorsed by me in my previous term of office, namely, that the present responsibilities of my position be consolidated and that the office that I presently hold be designated Director of Public Works with the responsibilities of highways and other works severally delegated.

2. That consideration be given to the appointment of a commission for the study of a merit system or civil service program applicable to the situation in Delaware.

3. That the enactment of an adequate storm water drainage control bill for suburban areas be sponsored.

4. That, in conjunction with the outdoor advertising industry, a more effective Outdoor Advertising Law be developed and submitted to next session of the General Assembly.

5. That, with the trend to larger and wider house trailers and with increasing house moving, more stringent moving regulations be adopted.

6. That, should the law recommended in "4" above not be enacted, the following items relative to Outdoor Advertising be adopted:

a. Prohibit advertising displays with blinking red or yellow lighting that could be mistaken for warning or danger signals.

b. Prohibit illuminated advertising displays if so located as to reduce the effectiveness of any traffic control device.

c. Prohibit any flood lights or lighting that might tend to disrupt vision of travelers on adjacent highways.

d. Formulate policy to provide for the moving of signs that come within the highway right-of-way because of additional right-of-way acquisition at the time of road construction.

e. Prohibit outdoor advertising adjacent to controlled access highways to a distance from the highway right-of-way compatible with proposed federal legislation.

7. That consideration be given to the employment (full time) of two or more attorneys and the establishment of a legal staff within the framework of the Department, thereby providing legal advice at all times on right-of-way matters and on other items. It is believed that such a staff could be manned at no greater expense than in the present system of having work done on fee basis.

8. That appropriate legislation be sponsored which will grant the state the right to procure advance right-of-way and lands in excess of immediate requirements.

Very truly yours,
R. A. HABER
Chief Engineer

CONSTRUCTION

L. W. Novinger, Construction Engineer

The functions of this Division are:

- 1) To assist the three County Divisions in construction supervision,
- 2) To review plans, specifications and special provisions,
- 3) To make final inspections and to accept contracts when completed,
- 4) To visit each contract during construction.
- 5) To process all monthly and final estimates.

Dirt Road Program

During the past year, in order to comply with the intent of the law establishing the program, the Dirt Road Program was expanded considerably. As of July 1, 1957, the following dirt road mileages were under contract:

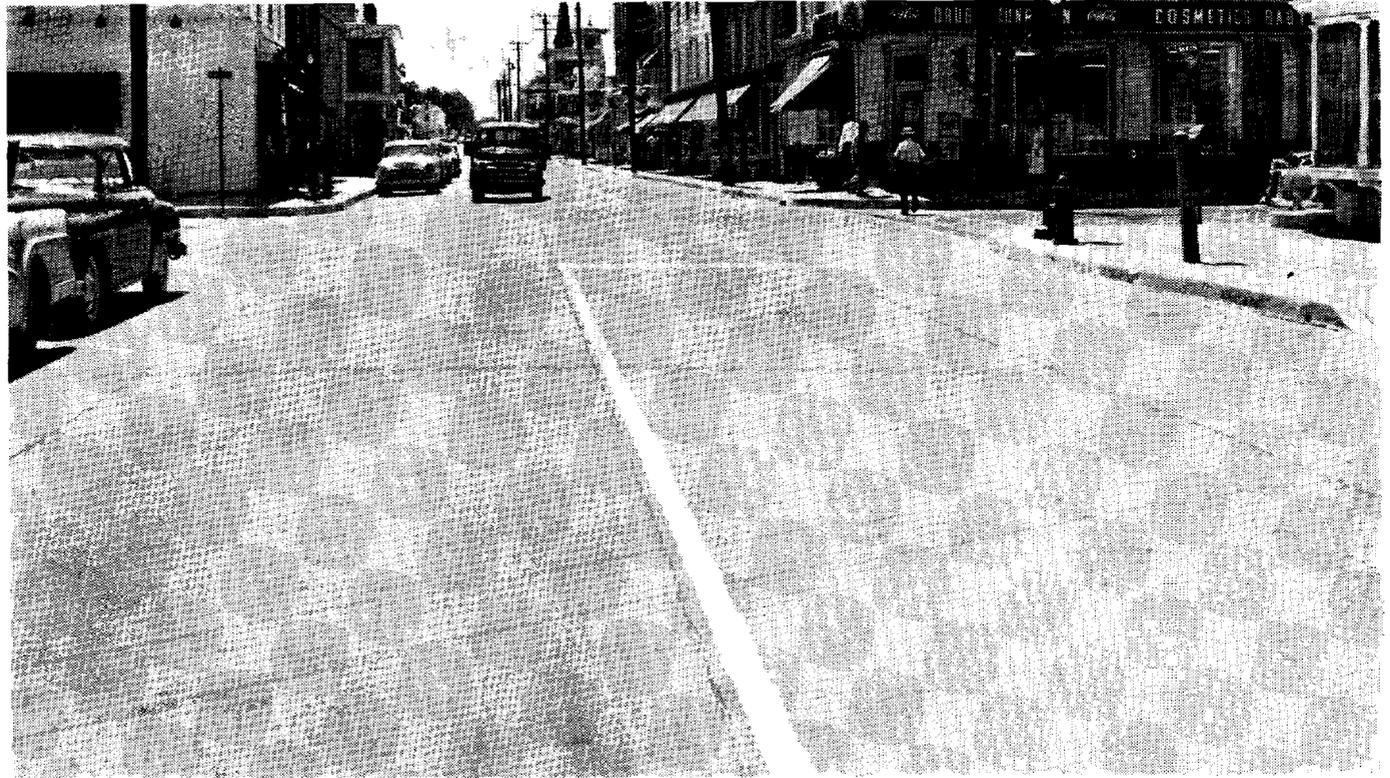
New Castle County	0.606
Kent County	75.256
Sussex County	176.994

In order to expedite construction, detailed surveys were eliminated and plan preparation work was held to a minimum of essentials. In construction, in-place soils were used as much as possible by stabilizing them with approximately 3.5% of an inverted emulsion asphalt. This was accomplished by spraying asphalt into soil which had been prepared to a fixed moisture content, mixing with self-propelled mixers, aerating to reduce moisture, and compacting to the required density. After curing the stabilized base, sealing was accomplished with a double course of surface treatment.

This method of stabilization eliminates the need for large quantities of borrow, and has successfully resulted in more economical roads of higher bearing capacity. The average cost per mile of this type of construction has been estimated at slightly less than \$17,000.

Contract Statistics

During the 1956-57 fiscal year a grand total of 134



Commerce Street, Smyrna, reconstructed.



Typical dirt road after reconstruction.

contracts were under construction. The location of these contracts by counties is as follows:

New Castle County	35
Kent County	36
Sussex County	63

The contract values for these projects are as follows:

New Castle County	\$ 6,608,486.85
Kent County	4,150,319.40
Sussex County	7,903,334.37
Total	\$18,662,140.62

The value of the work not completed and carried over to the 1957-58 fiscal year is listed below:

New Castle County	\$2,892,256.76
Kent County	1,425,154.67
Sussex County	3,707,338.65
Total	\$8,024,750.08

Contract work involved the number of miles shown below:

New Castle County	21.400 Miles
Kent County	91.869 Miles
Sussex County	208.766 Miles
Total	322.035 Miles

This mileage does not involve ditch and drainage projects now under the supervision of this division, or Suburban Development work. A tabulation of construction activities during fiscal year 1957 is contained in Table I of the Appendix.

Contract Descriptions

Following is a description of some of the major contracts in progress during the year:

NEW CASTLE COUNTY

Contract No. 800 (Concord Avenue)

This contract consists of the construction of Concord Avenue between Market Street and Broom Street in Wilmington. The existing roadway is widened to provide for a 40 foot travelway with curbs and sidewalks. The pavement slab is reinforced concrete with carbon black added to darken the pavement and reduce glare. Storm water sewers are an integral part of this contract, and



New Castle Avenue before and after reconstruction.

retaining walls were constructed where required to reduce property damage.

Contract No. 1163 (Maryland Avenue)

The limits of this contract extend from Boxwood Road to Silview, and part of the contract is a one-way system through the town of Newport, where westbound traffic uses Justis Street and eastbound traffic uses Market Street. These streets are widened to 40 feet, consisting of two 12 foot travel lanes with 8 foot parking lanes and curbs and sidewalks. The section from the easterly limits of Newport to Boxwood Road consists of reinforced concrete pavement 60 feet in width, four 11 foot travel lanes and two 8 foot parking lanes. Retaining walls are provided to protect the adjacent properties. An extensive storm water sewer system was provided in the Newport area west of James Street and passes through the DuPont Krebs Plant property to discharge into the Christina River.

Contract No. 1258 (New Castle Avenue)

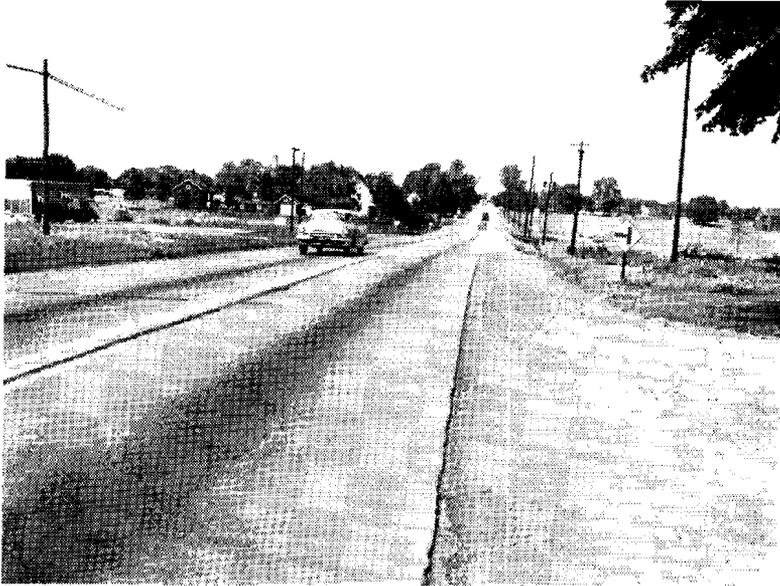
This project begins at Landers Lane and extends to the intersection of New Castle Avenue and Rogers Road. The new roadway is 80 feet between curbs and consists of two new 12 foot lanes of concrete pavement, the existing pavement widened to 24 feet, a 16 foot median and two 8 foot parking lanes. Storage lanes for left turn traffic were provided at important intersections. The existing pavement was covered with 3 inches of hot-mix asphaltic concrete surface course. The parking lanes were constructed of water bound macadam base with 3 inches hot-mix asphaltic concrete surface.

Contract No. 1368 (Concord Pike)

This construction begins at Talleyville and extends northward to the State line. It consists of widening the existing pavement to provide four 12 foot travel lanes and shoulders 8 feet in width. The existing pavement was covered with hot-mix asphaltic concrete. The new pavement consists of 9 inch reinforced concrete 24 feet in width. This contract, when completed, will provide a divided highway on U. S. Route 202 from Wilmington to the Pennsylvania State Line.

Contract No. 1398 (Bellevue Road—Philadelphia Pike to Governor Printz Boulevard)

This contract, which begins at the Philadelphia Pike and extends to Governor Printz Boulevard, widens the



**Concord Pike (U. S. 202) before and after
construction of additional lanes.**

existing roadway to 24 feet, and provides integral curb and gutters. The pavement is built of water bound macadam base course with 3 inches of hot-mix asphaltic concrete surface. Areas are provided for the construction of sidewalks. An extensive storm water drainage system was added to this contract to correct a serious flooding condition.

Contract No. 1497 (Kirkwood Highway)

This contract begins near the Baltimore and Ohio Railroad Underpass in Newark and extends to Limestone Road. Within the City the roadway is widened to 48 feet between curbs. The widening consists of a concrete base course 8 inches in depth, and both the new and the existing pavement are covered with hot-mix asphaltic concrete surface. The remainder of the contract provides for the construction of four lane highway separated by a median 4 to 20 feet in width, with shoulders 8 feet wide. When this project is completed a divided highway, State Route 2, will extend from Newark to Wilmington.

Contract No. 1498 (Main Street, Newark)

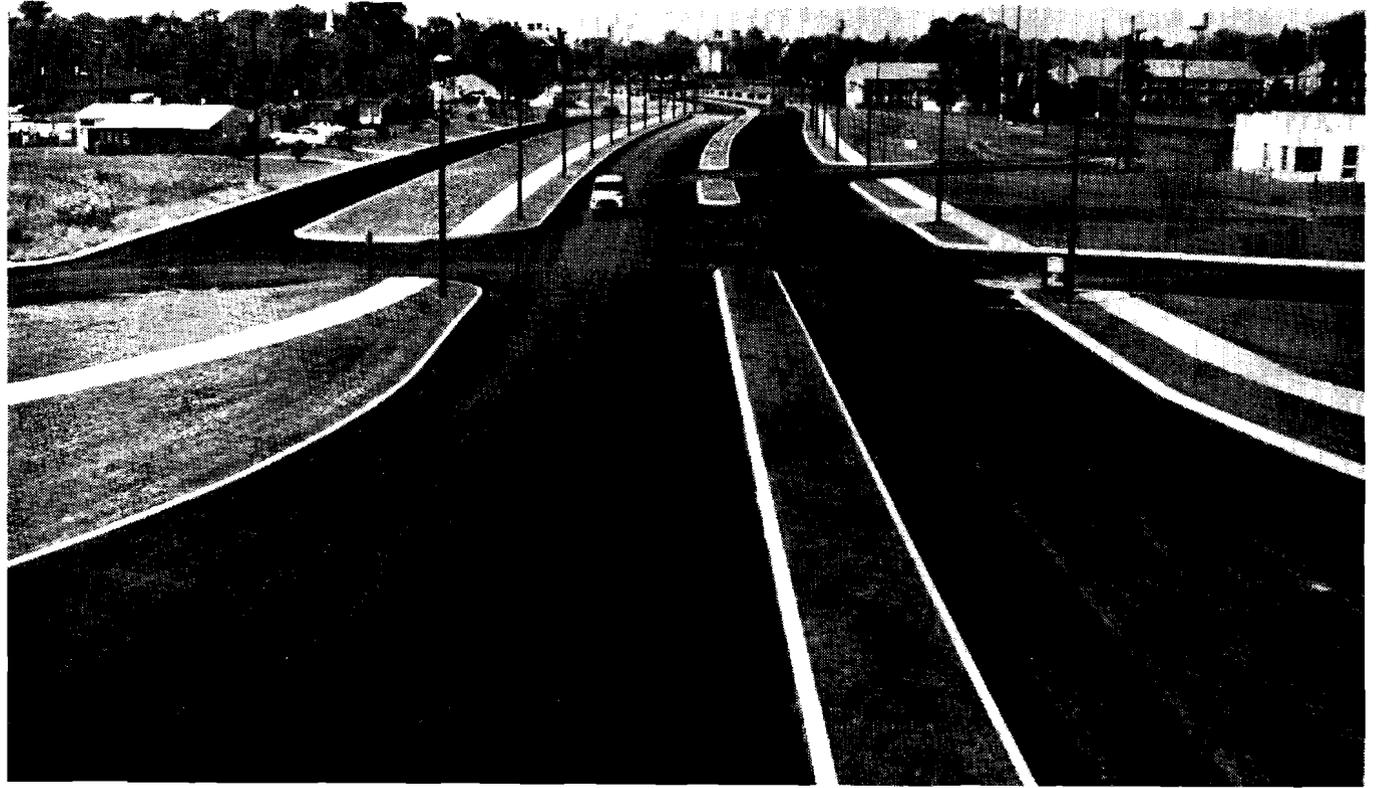
This project, which begins at the Baltimore and Ohio Railroad Crossing in Newark and extends to the intersection of Route 2 and Route 273, provides for the reconstruction of Main Street to two 12 foot travel lanes and two 8 foot parking lanes of reinforced concrete, with curbs and sidewalks. The street is a part of the one-way system in Newark, with Delaware Avenue for eastbound traffic and Main Street for westbound traffic. An extensive storm water system is a part of this contract.

Contract No. 1500 (Fourth Street—Wilmington)

This project provides for resurfacing Fourth Street between Market Street and Spruce Street. Between King and Market Street repaving with plain concrete base course and hot-mix asphaltic concrete was undertaken in order to reduce an excessive crown.

Contract No. 1501 (Route 13—McDonough to St. Georges)

This project consists of widening on the median side of the present northbound lane with 8 inch plain concrete base to provide for a travelway 24 feet wide. Both the new and existing concrete pavement were then covered with hot-mix asphaltic concrete pavement.



Court Street, Dover.

Contract No. 1538 (Woodcrest Drainage)

This contract corrects a serious drainage condition north of Maryland Avenue resulting from the residential development in the area adjacent to Conrad School.

KENT COUNTY

Contract No. 916 (U.S. Route 13)

This contract called for the construction of a divided highway from a point north of Harrington to Farmington. It provides for the northbound lane of a divided highway separated by a 50 foot median from the existing two lane roadway. This contract marks the completion of a divided highway extending north and south through the entire State.

Contract No. 1169 (Court Street)

The contract provides for the construction of a divided highway leading from Route 13 to Legislative Hall, and for a reinforced concrete arch bridge over St. Jones River. The highway consists of two 26 foot travel lanes, constructed of plain concrete, covered with hot-mix asphaltic concrete, and separated by an 8 foot median. In addition to two sidewalks 6 feet in width which will be constructed on each side of the highway, a border road has been constructed along the south side of the highway to provide access for residents of Capitol Park.

It is noteworthy that the bridge was designed in keeping with the existing Georgian architectural pattern contained in the Legislative Hall and adjacent buildings in the area.

Contract No. 1444 (South Little Creek Road)

This project, beginning at U. S. 13 and extending eastward past the new Dover Elementary School for a distance of approximately 1½ miles, is constructed of water bound macadam base course and hot-mix asphaltic concrete 24 feet in width. A curb and sidewalk are provided on the south side of the highway from Route 113 to the school entrance.

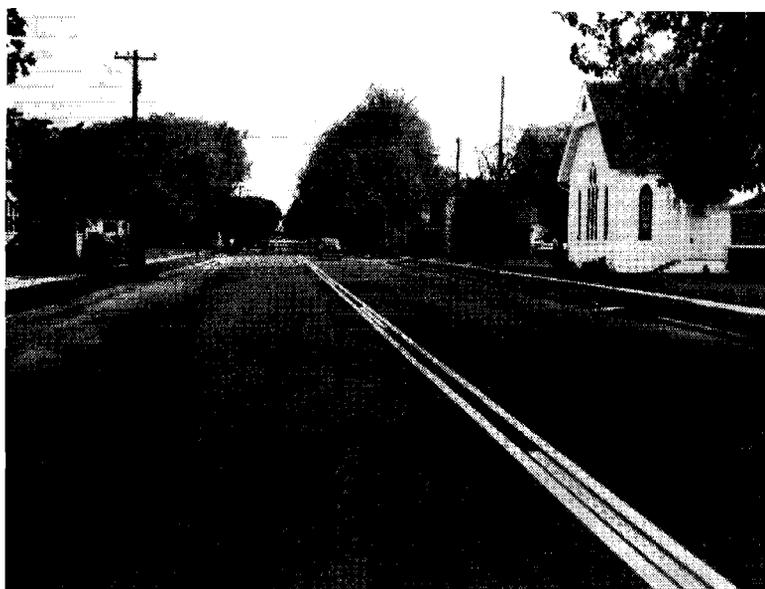
SUSSEX COUNTY

Contract No. 1151 (Route 14)

The contract consists of widening Route 14 from Five Points to Waples Pond. The slip form paving method which eliminates the use of forms and expedites concrete paving,



State Route 16, rural area.



State Route 16 through Ellendale.

was used to provide the 4 feet of plain concrete base course. Together with the existing pavement, this base was then covered with 3 inches of hot-mix asphaltic concrete. Sufficient right of way has been acquired for the eventual construction of a divided highway along this route.

Contract No. 1422 (Stein Highway)

This project begins at a point west of the City of Seaford near County Road 553 and extends to Pennsylvania Street in Seaford. The existing concrete pavement is widened to provide for a 24 foot travelway with 8 foot shoulders except that in the built-up areas adjacent to Seaford the pavement is widened to 40 feet and curbs and sidewalks constructed as necessary. An extensive storm water drainage system was provided to drain the roadway and the Seaford Elementary School property. The system is carried on Hall Street to the Nanticoke River, and crosses under 5 tracks of the Pennsylvania Railroad Company. This work was completed without any inconvenience to the Railroad company and did not interfere with the movement of its trains.

Contract No. 1429 (Greenwood to Ellendale)

This contract provides for the widening and resurfacing of Route 16. The slip form paver was used on this job to construct the base course, and the total 24 foot travelway was then covered with 3 inches of hot-mix asphaltic concrete.

Contract No. 1446 (Maryland Line to Shaft Ox Corner)

This contract provided for widening to 24 feet and patching the existing concrete pavement of Route 26. This widening was the first attempt by the Delaware State Highway Department to use the slip form paver, and more than 8,000 feet were paved in one day with satisfactory results. After widening, both the new and existing concrete were paved with 3 inches of hot-mix asphaltic concrete.

Contract No. 1489 (Ellendale to Milton)

This contract calls for widening the existing concrete pavement between Ellendale to Milton to provide for a 24 foot travelway, and covering the new and the existing pavement with hot-mix asphaltic concrete. The section through the Town of Ellendale was surfaced between the



State Route 24, from Shaft Ox Corner to Millsboro,
before and after reconstruction.

curbs. A storm water drainage system was included as part of this contract to take care of storm water flooding conditions in the Town of Ellendale.

Contract No. 1490 (Shaft Ox Corner to Millsboro)

This project is a continuation of Contract 1446 and extends to the Town of Millsboro. It consists of widening and resurfacing the existing concrete road to provide for a 24 foot travelway. A storm water system was included as a part of the work to correct a drainage condition west of Millsboro along Route 113.

CONSTRUCTION RECOMMENDATIONS

NEW CASTLE COUNTY

INTERSTATE SYSTEM

25

	Miles	Estimated Cost
FAI-1 Maryland Line to Interchange W. of Farnhurst	18.10	\$112,243,000
FAI-2 Interchange W. of Farnhurst to Penna. Line (via West of Wilmington)	10.99	45,986,000
FAI-3 Interchange W. of Farnhurst to Penna. Line (via East of Wilmington)	10.50	40,885,000
Total Interstate System	39.59	\$199,114,000

CONSTRUCTION RECOMMENDATIONS

NEW CASTLE COUNTY

URBAN

Road No.	Location	Rating	Mileage	Cost Estimated
309	N. Chapel Street — W. Main Street	---	0.70	\$ 250,000
	2nd Street — Walnut to Monroe	---	0.60	600,000
4A	Baynard Boulevard — Washington Street to Concord Avenue	58	0.63	275,000
43	Washington Street — Baynard Boulevard to N. Wilmington Line	56-64	1.88	660,000
19	Wilmington Road — Road 55 to N. New Castle Line	56-58	0.87	395,000
498	Broom Street — Lancaster Avenue to Pennsylvania Avenue	61	0.77	270,000
41	W. Main Street — Route 2 to Newark Limits	61-73	1.18	380,000
9	Eleventh Street — Northeast Boulevard to King Street	62-65	0.67	235,000
313	New London Avenue — Route 2 to N. Newark Limits	63-67	1.26	380,000
13	N. Chapel Street — Route 2 to N. Newark Limits	63-73	1.03	310,000
237	Lancaster Avenue — DuPont Road to Greenhill Avenue	64	0.32	110,000
11	Union Street — Sycamore Street to Pennsylvania Avenue	65	1.07	375,000
50	S. Heald Street to Spruce Street	65	0.33	115,000
24	Market Street — 18th to City Line	64	1.19	415,000
28	S. Heald Street — S. Wilmington Line to 0.25 S. "D" Street	65	0.25	90,000
497	4th Street — Market to Union	75	1.20	300,000
Total New Castle County Urban System			13.95	\$5,000,000

CONSTRUCTION RECOMMENDATIONS

NEW CASTLE COUNTY

PRIMARY

27

Road No.	Location	Rating	Mileage	Estimated Cost
24	Naaman's Underpass — Approaches		—	\$ 400,000
237	Lancaster Pike — N. DuPont Road to Center Road	43	1.00	300,000
18	Route 273 — Newark to Christiana	54-69	4.90	610,000
19	New Castle Avenue — N. New Castle Limits to Landers Lane	54	0.89	285,000
6	Route 41 — Cranston Heights to Basin Corner	58-63	3.91	1,570,000
21	Route 41 — Cranston Heights to Brandywine Sanatorium	56-62	1.95	350,000
369	Rogers Road — New Castle Avenue to U. S. 13	61	0.70	175,000
237	Lancaster Pike — Center Road to Route 41	58-61	3.68	295,000
28	S. Heald Street — Rogers Corner to S. City Line	65	0.30	30,000
3	Route 273 — Churchman's Road to Route 7	65	2.49	250,000
5 & 3	Christiana to Bear & Christiana to Churchman's Road	65-73	4.60	400,000
43	Washington Street Extension — N. Wilmington Line to Philadelphia Pike	65-80	1.21	240,000
6	Route 41 — Basin Corner to Road 55	65	1.23	100,000
50	Governor Printz Boulevard — Stockdale to N. Wilmington Line	73-81	5.15	770,000
34	U.S. 13 — St. Georges to State Road		6.20	500,000
1	U.S. 13 — Smyrna to Point Breeze		5.10	460,000
11	Kirkwood Highway — Price's Corner to Wilmington Avenue		1.20	100,000
41	Route 273 — W. Newark Limits to Maryland Line		0.70	75,000
Total New Castle County Primary System			45.21	\$6,910,000

CONSTRUCTION RECOMMENDATIONS

NEW CASTLE COUNTY

SECONDARY

Road No.	Location	Rating	Mileage	Estimated Cost
280	Kirkwood Highway — Newport Gap		3.10	\$ 600,000
27	Kirkwood Highway — Lancaster Pike	28-30	0.90	300,000
271	Center Road — Lancaster Pike to Barley Mill Road	31	0.77	230,000
220	Philadelphia Pike — Governor Printz	33-49	1.40	640,000
212	Silverside Road — Philadelphia Pike to Marsh Road	33-49	1.90	340,000
214	Shipley Road — Washington Street Extension to Wilson Road	34-45	1.56	156,000
270	Faulkland Road — DuPont Road to Centerville Road	35-38	1.76	176,000
336	Stanton to Newport	35-37	2.03	510,000
232	Rockland Road — New Bridge Road to Rockland	35-43	1.43	150,000
259	Barley Mill Road — Center Road to Kennett Pike	37	0.47	140,000
209	Harvey Road — Veale Road to Naaman's Road	39-59	2.94	300,000
373	Landers Lane — 373A to New Castle Avenue	40	0.78	80,000
13	Route 72 — Milford Crossroads to Limestone Road	41-45	3.51	280,000
203	Fauk Road — Concord Pike to Pennsylvania Line	41-58	4.00	400,000
366A	Route 7 to Ogletown	41-47	2.84	285,000
330	Kiamensi Road — Road 336 to Old Capitol Trail	42-44	0.84	25,000
212	Marsh — Concord Pike	42-66	2.65	700,000
5, 336 and 31	Route 7, Pennsylvania Line to Route 71	42-71	12.10	1,310,000
221	Road 221B to Kennett Pike	45-52	2.60	260,000
214	Naaman's Road — Wilson	45-63	2.90	300,000
336	Cooch's Bridge to Christiana	46-50	4.55	455,000
207	Darley Road — Philadelphia Pike to Naaman's Road	46-65	2.20	350,000
261	Road 242 to Road 247 thru Ashland	48	1.72	170,000
441	Mathews Corner to Odessa	48-50	1.03	100,000
27	DuPont Road — Maryland Avenue to Route 2	49	0.44	55,000
307	Road 324 to Road 329	49	1.77	55,000

CONSTRUCTION RECOMMENDATIONS

NEW CASTLE COUNTY

SECONDARY

Road No.	Location	Rating	Mileage	Estimated Cost
338	Road 336 to Route 2	50-65	0.50	\$ 240,000
429	Armstrong's Corner to Odessa	51-61	3.63	290,000
448	Noxontown Road to Fieldsboro	52	2.48	200,000
410	Delaware City to Road 378	52-59	2.54	205,000
378	Delaware City Road to New Castle	52-65	5.44	545,000
243	Old Kennett Road - Kennett Pike to Pennsylvania Line	53	2.96	240,000
23	Philadelphia Pike - Washington Street Extension	55	0.90	375,000
40	Road 483 to Kent Line	58	1.55	45,000
294	Limestone Road to Lancaster Pike	58	1.33	105,000
433	Summit Bridge to Maryland Line	58	3.27	260,000
452	Stump's Corner to Fieldsboro	58	1.73	52,000
14	Newark - Milford Crossroads	60	1.84	450,000
355	Harmony Road - Capitol Trail to 366A	60	2.33	186,000
272	Centerville Road - Road 11 to Road 237	62	1.73	391,000
215	Faulk - Shipley Road	62-71	1.30	260,000
484	Road 469 to Road 471		1.45	22,000
485	Road 30 to U.S. 13	66	1.18	17,000
337	Road 338 to Capitol Trail	68	0.50	40,000
281	Duncan Road - Kirkwood Highway to 276		1.65	132,000
Total New Castle County Secondary System			100.50	\$12,422,000

CONSTRUCTION RECOMMENDATIONS

NEW CASTLE COUNTY

NON-FEDERAL AID PROJECTS

30

Road No.	Location	Rating	Mileage	Estimated Cost
Marion Avenue	U.S. 13 - - River Road (Bellefonte)	—	0.60	\$ 100,000
217	Lea Boulevard — Concord Avenue	—	0.74	260,000
267-268	Alapocas Intersection	—	—	20,000
Total New Castle County Non-Federal Aid Projects			1.34	\$ 380,000
Grand Total New Castle County			200.50	\$223,826,000

CONSTRUCTION RECOMMENDATIONS

KENT COUNTY

URBAN

Road No.	Location	Rating	Mileage	Estimated Cost
23	Loockerman Street — Dover	55	0.77	\$ 230,000
21	Route 14 — Mispillion River to Road 20, Milford	60	0.93	280,000
20	Walnut Street, Milford — Route 14 to U.S. 113	68	0.40	120,000
Total Kent County Urban System			2.10	\$ 630,000

PRIMARY

27	U.S. 113A — Little Heaven to Coopers Corner	54-70	7.82	625,000
7	U.S. 113 — Route 9 to S. Little Creek Road	55-62	4.93	740,000
8	U.S. 113 — Route 9 to Route 14	61	8.64	1,300,000
23	Loockerman Street — End of Divided Highway to U.S. 13	61-67	0.25	40,000
36	Route 14 — U.S. 13 to Road 37	67-71	3.50	280,000
2	U.S. 13 — Dover to Bishops Corner	77	4.00	200,000
Total Kent County Primary System			29.14	\$3,185,000

CONSTRUCTION RECOMMENDATIONS

KENT COUNTY

SECONDARY

Road No.	Location	Rating	Mileage	Cost Estimated
67	South Little Creek Road (Bridge to Approach)	—	0.50	\$ 100,000
357	Lebanon to Air Base Road	44	1.27	250,000
190	Layton Avenue, Wyoming — First to South	47	0.36	29,000
65	North Street, Smyrna to New Castle Line	49-62	1.50	150,000
29	Road 52 to Road 27 — Camden	53-70	2.96	300,000
39	W. Clayton Limits to Route 300	55-68	1.02	85,000
57	U.S. 13 to W. Felton Limits	56-62	0.65	52,000
34	U.S. 113 to U.S. 13	58-70	6.81	545,000
35	U.S. 113 to Road 34	58-63	7.35	735,000
45	Cheswold to Kenton	59-68	5.10	410,000
88	U.S. 13 to Route 9	59	2.51	225,000
26	U.S. 113 to Rising Sun	59-62	2.52	252,000
53	Route 10 — Wyoming to Maryland Line	60-66	12.41	993,000
384	Route 14 to Houston	62	0.89	71,000
16	Route 8 — U.S. 13 to Little Creek	67-68	3.87	310,000
453	Road 38 to Route 6, Clayton	67	0.41	32,000
12	Leipsic to Smyrna	68	5.90	500,000
17	Road 68 to S. Little Creek Road	68	3.95	395,000
206	Hazletville to Chapeltown (Road 222)	68	3.18	160,000
33	Road 389 to Route 12	69	2.23	225,000
104	Road 158 to Road 100	70	1.13	56,000
354	Road 88 to Route 9 (Road 15)	70	0.77	39,000
57	Felton to Whiteleysburg	73	9.74	580,000
380	Road 33 to Route 12	73	3.91	60,000
51	Division Street (Dover)	74-36	2.00	1,000,000
10	Woodland Beach Causeway	78	2.00	200,000
Total Kent County Secondary System			84.94	\$7,754,000

CONSTRUCTION RECOMMENDATIONS

KENT COUNTY

NON-FEDERAL AID PROJECTS

23

Road No.	Location	Rating	Mileage	Estimated Cost
	Center Street — Harrington	—	0.30	\$ 250,000
			Total Kent County Non-Federal Aid Projects	0.30 \$ 250,000
			Grand Total Kent County	116.48 \$11,819,000

CONSTRUCTION RECOMMENDATIONS

SUSSEX COUNTY

URBAN

Road No.	Location	Rating	Mileage	Estimated Cost
14	Route 14 -- S. Milford Limits to Kent Line	59-62	0.69	\$ 175,000
Total Sussex County Urban System			0.69	\$ 175,000

PRIMARY

50	Route 14 -- Indian River to Rehoboth	46-58	6.89	\$ 865,000
18	Georgetown -- Road 319	58	1.10	250,000
50	Route 14 -- Maryland Line to Bethany Beach	60	5.98	750,000
14A	Route 14A -- End of Dual to Rehoboth Limits	62-71	0.59	90,000
24	Route 24 -- U.S. 113 to Road 248	62-71	0.71	180,000
50	Bayard Avenue -- Philadelphia Street to Rehoboth Avenue	65	0.10	30,000
26	Route 26 -- Dagsboro to Bethany Beach	69-76	10.37	830,000
18A	Market Street, Bridgeville -- 404 to 4A	72	0.45	135,000
13	U.S. 13A -- Road 20 to 20A, Seaford	65-68	0.88	265,000
404	Bridgeville -- Maryland Line	68	7.60	1,000,000
50	Bethany Beach -- Indian River	69	5.60	1,100,000
14	Route 14 -- Road 38 to Milford	71-74	8.63	1,294,500
13	U.S. 13A -- 0.09 S. of Maryland Avenue to Route 28, Laurel	72	0.24	72,000
18	Route 18 -- Route 404 to Georgetown	73-86	9.66	775,000
18, 18A	Bridgeville to Maryland Line	77-88	9.51	760,000
Total Sussex County Primary System			68.31	\$ 8,396,500

CONSTRUCTION RECOMMENDATIONS

SUSSEX COUNTY

SECONDARY

Road No.	Location	Rating	Mileage	Estimated Cost
370	Road 52 to Road 382	43	1.44	\$ 72,000
382	Road 54 (Omar) to Road 389	45-73	5.25	265,000
76, 419	East Delmar Limits to W. Delmar	46-59	0.92	74,000
224	Slaughter Beach to Road 216	46-58	3.78	305,000
36	Route 14 to Road 208	48-51	1.20	95,000
357	Ocean View — Road 26 to Canal	52	0.60	30,000
376	Frankford to Church Street, Selbyville	52-62	4.06	325,000
397	Road 58 to Maryland Line, Selbyville	54	0.61	31,000
26	Road 26A to U.S. 113	55	5.58	445,000
399	U.S. 113 to Maryland Line	55	0.48	7,000
401	Road 26 — Dagsboro to U.S. 113	55-65	2.39	190,000
339	Road 331 to U.S. 113	56	0.71	36,000
377	Road 376 to U.S. 113	56	0.52	26,000
319	Road 248 to Road 22 (Route 5)	57	1.33	27,000
346	Road 26 to Road 54	57	0.67	10,000
524A	Route 18 to Road 46	57	2.88	145,000
16	Road 32 to U.S. 13	57-59	1.48	120,000
20	Route 20 — U.S. 113 to Road 431	59	4.23	340,000
78	U.S. 13A to Road 493	59	2.56	51,000
225	Lincoln to S. Milford Limits	59	1.93	100,000
16	Route 16 — Milton to Route 14	60	2.69	215,000

CONSTRUCTION RECOMMENDATIONS

SUSSEX COUNTY

SECONDARY

Road No.	Location	Rating	Mileage	Estimated Cost
297	Route 24 to Oak Orchard	61	1.99	\$ 100,000
331	E. Millsboro Limits to Road 334, Dagsboro	61	3.76	75,000
544	13A to 0.29 W. of 546	61	1.72	35,000
549	Route 20 to Road 553	61	3.39	68,000
70	King Street, Laurel to 64	61-63	5.40	425,000
619	Road 36 to U.S. 113	61-64	1.50	150,000
285	Road 22 to Route 18	62	5.82	117,000
319	Road 18 to Road 248	62	5.40	108,000
360	Route 14 to Road 357	62	1.30	26,000
493	U.S. 13A to N. Bethel Limits	62	2.04	16,000
571	Route 16 to Maryland Line	62	4.47	90,000
64	U.S. 13A to Route 26	62-69	10.73	860,000
16	Maryland Line — Owens	62-94	11.00	1,200,000
546	Road 544 to Cannon	63	1.07	21,000
207	Road 225 — Lincoln to 113	63	1.11	18,000
365	Road 52 to Road 54	64	1.85	30,000
427	Road 414 to Road 64	64	1.83	29,000
22	Harbeson to Waples Pond	64	8.20	800,000
40	Route 13 — Road 42	74	5.40	300,000
32	Road 404 — Route 16	77	3.70	100,000
Total Sussex County Secondary System			126.99	\$ 7,477,000

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CONSTRUCTION RECOMMENDATIONS

SUSSEX COUNTY

NON-FEDERAL AID PROJECTS

37

Road No.	Location	Rating	Mileage	Estimated Cost
	S.E. Second Street (Milford)	---	--	\$ 500,000
	Washington Street (Millsboro)	---	--	250,000
54A	Road 54 -- U.S. 113	---	1.02	100,000
	Total Sussex County Non-Federal Aid Projects		1.02	\$ 850,000
	Grand Total Sussex County		197.01	\$16,898,500

STATEWIDE DIRT ROAD PROGRAM

Dirt road construction to be continued in accordance with Legislative directive. Work to be divided in proportion to remaining dirt roads in each of the counties		\$ 2,000,000
Grand Total Statewide Road Construction	513.99	\$254,543,500

**RECOMMENDED BRIDGE CONSTRUCTION
NEW CASTLE COUNTY**

28

Location	Cost
Fenimore Bridges	\$ 175,000
Drawyers Bridge and Approaches	600,000
Appoquinimink Bridge Repairs	100,000
Silverside Road -- B&O Underpass	400,000
Darley Road -- B&O Overpass	200,000
Marrow Road -- P.R.R. Underpass	225,000
State Road -- Grade Separation	300,000
White Clay Creek -- Harmony Road	250,000
Long Bridge Over Saw Mill Branch, Northeast of Smyrna	125,000
Misc. Steel Truss Replacements, New Castle County	200,000
New Castle County Total	\$ 2,575,000

SUSSEX COUNTY

North Approach Indian River Inlet	\$ 400,000
Sussex County Total	\$ 400,000
Total Bridge Construction	\$ 2,975,000
Grand Total Statewide Construction	\$257,518,500

MAINTENANCE

The need for continuing expansion of the Highway Maintenance Program is evident from a review of other parts of this report. First, increasing traffic on the Primary and Secondary highways means increased maintenance on surfaces and shoulders. Second, over 100 miles of suburban streets were added to the State Highway System during the past year. Third, more than 250 miles of dirt roads had been surfaced under the Dirt Road Program by the end of this fiscal year, and surfaced roads mean costlier maintenance than dirt roads. It is obvious that increased expenditures for equipment, for personnel, and for materials are necessary if the State Highway Department is going to do an adequate job of safeguarding the highway investment.

An indication of the scope and variety of maintenance services can be gained from the following sections. These contain a summary of activities in the three counties, and a report from the Equipment and Maintenance Engineer.

KENT COUNTY DIVISION

W. F. McFaul, Jr., Division Engineer

The maintenance operations in Kent County are organized under two supervisors, each responsible for one-half the county. These two sections are supported by the Equipment Section, which distributes and services heavy equipment such as bulldozers and cranes. At the end of this fiscal year, 172 bi-weekly personnel were engaged in maintenance activities throughout the county.

Roadway Maintenance

The change of road types resulting from the Dirt Road Program means that personnel and equipment, such as blade trucks, which are used in maintaining dirt roads, must be gradually changed over to hard surface maintenance crews. Maintenance techniques for suburban streets, which are an increasing responsibility in terms of both mileage and maintenance needs, are being developed.

Kent County's Surface Treatment Program consisted of retreatment of presently surfaced roads. To achieve the maximum benefit within the program limits, only the outer 4-6 feet on each side were resurfaced in most cases. The shoulder-edge breakup was thus taken care of on many

more miles than would have been possible if the entire roadway surface had been retreated.

Highway Beautification

Maintenance of the U.S. 13 median and other planted areas is a never-ending problem. State and contract mowing operations continued as in previous years. Chemical controls on the growth of grasses and chemical soil sterilants were used, but a full report on their effectiveness cannot be made until more time has elapsed. Control of the "Dutch Elms" disease has presented a problem, partly because it has not been possible to carry out a complete spray program.

The maintenance of dump sites continues to grow. The Smyrna and Barker's Landing dumps take considerable time in maintenance. Another problem is the dump area at Killen's Pit, which is being surrounded by residential development. It may become necessary to abandon this site and establish a less objectionable location.

Snow Removal

This was a minor item during the past winter. Only four storms required the mobilization of snow removal forces, and if the weather conditions had been more accurately predictable, it would not perhaps have been necessary to mobilize the entire division on each occasion.

In any case, intersections and steep grades must be treated promptly in the event of light snow or icing conditions. Treated abrasives rather than straight chemicals were principally used for these purposes.

NEW CASTLE COUNTY DIVISION

L. L. Maxwell, Division Engineer

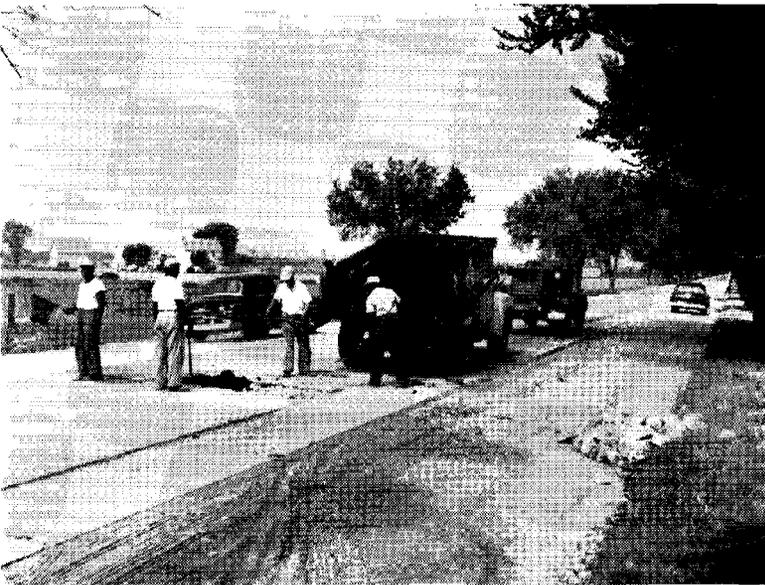
The maintenance effort in New Castle County covers a wide field, from the maintenance of Fort Christina State Park to the surface treating of many miles of highway. A summary of these activities is presented below.

Roadway Maintenance

The patching of concrete roadway was continued throughout the year, as the weather permitted. Spots which had failed were removed and replaced with new concrete. A crack filling operation was completed, in which 10,900



Shoulder maintenance.



Patching concrete pavement.

gallons of crack filler were used. Patching of blacktop and surface treated roads was a continuous operation of the division. The following materials were used in both the patching and surface treating programs:

Asphalt	175,915 Gal.
Stone Chips	8,334 Tons
Quarry Waste	1,343 Tons
Amiesite	4,966 Tons
Hot Mix	305 Tons
Cold Patch Material	2,068 Tons

Drainage

Grading ditches and shoulders to maintain satisfactory drainage conditions is an endless task of the maintenance forces. Another phase of this work is the placement of pipe at new locations, and the necessity for replacement of old pipe in others. To cut maintenance time and costs, several small bridges have been replaced by pipe culverts. The Gradall acquired this year has been invaluable in these operations.

All told, the following amounts of pipe have been used in drainage work:

12" R. C. Pipe	3,436 ft.
15" R. C. Pipe	236 ft.
18" R. C. Pipe	40 ft.
24" R. C. Pipe	232 ft.
30" R. C. Pipe	96 ft.
36" R. C. Pipe	72 ft.
12 Gauge Asphalt Coated Steel Pipe	56 ft.

In addition, a considerable amount of pipe was salvaged from construction operations and installed as needed.

Highway Beautification

The crews in this work were kept to a busy schedule throughout the year, as the demand for their services seemed to increase. Hedges and trees were removed in locations where it was deemed advisable to effect one or more of the following:

- 1) Improve drainage
- 2) Improve sight distance at intersections
- 3) Eliminate other traffic hazards
- 4) Prevent accumulation of snow drifts

Mowing was started by our own equipment in parkways, etc. during April and carried out through the season. Contract mowing began in May and ended in early October, incurring a total cost of \$22,933.20.

Snow Removal

Preparation for this program began on October 15, 1956, with the erection of all snow fences being completed by November 15. This year we received 30,000 feet of new snow fence which was used for replacement and as additional protection at beneficial locations on Secondary roads.

The usual precaution of placing the plows on trucks and loading them with treated sand was observed each night during the season. It was found, however, that even the treated sand would freeze on exceptionally cold nights. This situation resulted from the lack of storage space for the equipment.

The winter did not produce any heavy snows, but there was a constant threat from small storms and icing conditions. Slippery roads were a major problem and made it necessary to have standby crews available almost constantly.

In keeping the roads clear of packed snow and ice, the following materials were used:

Sand	.....	3,987 tons
Calcium	.....	57 tons
Salt	.....	135 tons
Calcium-Salt	.....	22.4 tons
X73 Ice Remover	.....	10 bags

Movable Bridge Maintenance

New Castle County maintains and operates 9 movable bridges over navigable waterways throughout the county. Major maintenance operations were undertaken at several of these bridges during the year. At the Newport bridge it was necessary to cut three-quarters of an inch off the steel decking to free the jamming which appears to have resulted from movement of the south pier and abutment. In addition, repairs to motors and one light standard were necessary at this location. Third Street bridge maintenance included replacement of bridge railings and traffic gates, and minor repairs to the decking and one pump motor. The draw span of Seventh Street bridge continues to jam. Deck repairs to this bridge involved the use of 2900 b.m. of 3x8-24 and 3x12-24 long leaf yellow pine.

The number of openings to navigation at each bridge are listed below:

South Market Street	712
Walnut Street (from May 17)	176
Third Street	2,527
Seventh Street	110
Eleventh Street	0
Sixteenth Street	0
Fennimore Bridge	0
Flemings Landing	35
Newport	6

SUSSEX COUNTY DIVISION

J. H. McWilliams, Jr., Division Engineer

Responsibilities have been varied during the past year. Traffic increase and the large number of tourists visiting the Sussex County resort areas have added to the already heavy job of adequately maintaining roads, public lands, and picnic areas in the County.

Roadway Maintenance

The Surface Treatment Program in Fiscal Year 1956-57 totaled \$236,138, which provided seven miles of initial treatment, second treatment for 55 miles, and resurfacing of 135 miles. A card system recording pertinent information on each road has been initiated to eliminate the possibility of overlooking any road that is due for resurfacing.

A side issue of the expanded construction program has been extra work for maintenance forces. Keeping intersections clear of loose stone as a safety factor is one example. Other problems have been more extensive drainage work, more mowing on the newly surfaced roads, and repair of road edges and shoulders damaged by traffic before complete stabilization could be achieved.

The acquisition of several graders and replacement of 6 scraper trucks has had favorable results. The replacement of old equipment results in reduction of repair costs with an attendant increase in efficiency of operation.

Highway Beautification

Trash collection is becoming a major item of maintenance expense. Barrels have been located at strategic points to hold down on littering and dumping problems, but the work of collecting from the barrels prevents district crews from performing some of their normal activities. The acquisition of specialized trash removal equipment would be of definite benefit to the Division.

Plentiful rainfall during the summer of 1956, while aiding in reducing dust control measures, increased mowing costs three-fold on secondary roads because the mowing could not be postponed until late summer as is customary. Mowing costs continue to rise as higher type roads are constructed.

Drainage Maintenance

From a study of district foremen's reports and from public requests, the largest single item with primary district crews is solving drainage problems. The Gradall acquired this year aided in satisfying many urgent needs and in protecting shoulders and embankments from serious washouts. Surface treatment operations have increased the need and demand for entrance pipe installations, more of which could be done on the contracted work.

Other Maintenance

The Division is not only responsible for picnic areas, etc., but also for public land and tenting area maintenance. Major achievements in the Indian River vicinity were placing a new roof on the present property, doubling the water supply for the trailer area, and construction of an improved snack bar and bait stand south of the Inlet. Dust control in parking areas by oil application also added to the public's comfort. All funds received from tenting and concession receipts were utilized in Public Land improvements.

The Division was extensively engaged in repairing damage from Hurricane "Flossie" in the Fall of 1956. The efforts of maintenance personnel saved many residences from destruction at Lewes Beach. Breaks in the dunes between Rehoboth and Cape Henlopen and north of Indian River Inlet called for immediate repair using heavy equipment. It is hoped that the enlarged beach erosion program will prevent a recurrence of such damage.

EQUIPMENT AND MAINTENANCE

J. B. Bice, Equipment Engineer

During the past year, 1956-1957, much new equipment has been added to our inventory. This expansion was necessary because of the increased volume of work resulting from the increased construction programs, and increased maintenance activities as previously noted. Other necessary maintenance has required the purchase of specialized equipment, such as street sweepers, trash collectors, Gradalls, etc. Procurement of this equipment has enabled the Divisions to provide the increased services demanded by the public.

The snow removal equipment has been kept up to date, and during the past winter, with the addition of abrasive spreaders, has maintained safe riding conditions throughout the State. For the extra-severe storms we do not have sufficient equipment or manpower to do a complete job, but in emergencies, extra equipment may be rented from contractors as needed to augment our forces and equipment. During the year approximately four miles of metal panel snow fence was tried with excellent results. This type of fence has many advantages over the wooden type, two of which are ease of erection and the small storage space required.

Seventy-five equipment contracts were let during the year amounting to \$526,866.97, but much remains to be done to change our equipment from the old and often antiquated to the new and modern. A list of the equipment acquired during the past year is shown in Table II of the Appendix.

STAFF DIVISIONS

Supporting the highway construction and maintenance activities, which are the major functions of the State Highway Department, are several divisions whose services are vital to the highway program. The work that each of these divisions performed as part of the Department's operations during the year 1956-1957 is presented in this section.

The major part played by these divisions is exemplified by the preliminary work done in connection with the Interstate Highway System. To aid consulting engineers in their location and cost studies for these routes, most of the

divisions listed in this section were called on for information and cooperation. The present conditions and future needs of existing highways connecting with or crossing the Interstate System were provided by the Plans and Design Division. Traffic estimates, both current and future, were provided by the Traffic and Planning Division. The Bridge Division aided in determining structure requirements. Information on costs of land acquisition was given by the Right-of-Way Division, and data on soil conditions were given by the Division of Tests. Finally, information on present and future residential developments was provided by the Suburban Development Division.

This assistance was only a small part of the total activities of the staff divisions, but it is a typical example of how they function in serving the Delaware highway program.

PERSONNEL

Charles A. Stump, Administrative Assistant

Fiscal year 1957 was marked by continued efforts to establish a sound organization of sufficient strength and experience to fulfill the requirements of an expanding highway program both in construction and in maintenance. Toward this end the engineering forces, exclusive of the Mosquito Control Division, were expanded approximately 18% during the year. The total strength increased from 881 as of 30 June 1956 to 1,044 as of 30 June 1957, representing a net gain of 163 employees. In the construction forces a net increase of 67 employees was experienced, providing a total of 328 at the end of the fiscal year as compared with 261 at the end of fiscal year 1956. During the same period the maintenance forces were increased from 620 to 716, a net gain of 96 in strength.

In addition, changes were effected within the organization to provide more efficient administration of the various phases of the program. Expansion of the construction program with the accompanying increased activity in our Plans and Design Division and increased utilization of the services of consulting engineering firms indicated the necessity for providing a more co-ordinated system of producing and processing plans. To accomplish this end the position of Principal Highway Engineer was established for the purpose of providing a single co-ordinator for all plans prepared for use by the Department. To assist in handling the various phases of the services provided by consulting

firms, a Review Section was created. This group composed of engineers is charged with the review of the plans, design and work done by consultants.

In addition, other positions were established to provide better administration and better co-ordination in phases of the Department's activities where such improvements were considered essential. The position of Maintenance Engineer was re-established as a component of the staff of the Chief Engineer in order to provide statewide co-ordination of maintenance activities through a single staff member.

Again, for the benefit of better co-ordination of activities and in order to expedite the handling of matters pertaining to the various utilities, the position of Utilities Engineer was added to the Chief Engineer's staff. Here again responsibilities on a state-wide basis were consolidated in a single staff member thereby facilitating the completion of projects in this area.

Finally the office of Research Engineer was established as a full time activity. Prior to this transfer the position of Research Engineer had existed as a collateral assignment.

It is felt that the organization has benefited from the changes which have been accomplished during the past year. It is certainly evident that work in the areas where changes were effected can be handled more expeditiously and with greater effectiveness than in the past.

From the standpoint of personnel, one of our major problems continues to be in the inability to obtain qualified engineers in sufficient numbers. Competition in the engineering field continues to be very keen and it has become increasingly difficult to procure professional personnel especially young engineers.

The implementation of the provisions of the personnel policy manual at the beginning of the fiscal year provided an approved set of policies pertinent to personnel administration and ensured uniform interpretation of personnel matters throughout the engineering forces.

The Mosquito Control Division at the end of Fiscal Year 1956 had been reduced to a total of five employees as a result of the lack of funds during that year. As of 30 June 1957 the strength of this Division had been increased to a total of 20 persons.

As noted above, throughout the year, efforts have been made to create an effective organization. These efforts will be continued in order that the maximum engineering services can be made available to the public.

HIGHWAY DESIGN

E. A. Davidson, Principal Highway Engineer

The office of the Principal Highway Engineer is responsible for the preparation of all plans for highway contracts. This work is done both by the Plans and Design Division under Mr. E. B. Palenski, Plans and Design Engineer, and by consulting engineers whose work is coordinated through the Review Section under Mr. Robert Wetherall. The activities of each of these groups is outlined below.

PLANS AND DESIGN DIVISION

E. B. Palenski, Plans and Design Engineer

The end of fiscal year 1957 found the Plans and Design Division having designated a greater number of miles, serving a larger area of the State, than in any previous year.

A large portion of this mileage is a direct result of H. B. 172, the so-called "Dirt Road Bill," passed by the General Assembly in 1955. Under the provisions of this Act the State Highway Department is to improve 10% of the total dirt road mileage each year for ten years. This improvement consists of grading, reshaping, draining and surface treating rural roads. After a priority is established, the roads are designed and the work is treated as any other project.

On 1 July 1955 there were 1617 miles of dirt roads affected by H. B. 172 and by S. B. 387, which provide for the paving of certain streets in unincorporated developments. However, by the time the laws were enacted the construction season was so far advanced that during the first year only 74 miles, or about half of the required amount, could be designed and built. So fiscal year 1957 found the Plans and Design Division with one and one-half years of the dirt road program to accomplish. By dint of expeditious planning and by farming out more formal projects to consultants, a total of 347 miles of dirt road contracts were designed, advertised and awarded for construction. This brought the dirt road program more than up-to-date insofar as the Plans and Design Division was concerned.

Tabulated below are contracts designed during the past fiscal year in categories indicating the type of improvement.



Redesigned intersection of Shipley Street and Stein Highway, Seaford.

Plans and Design Division Projects

RECONSTRUCTION			
Contract	Description	County	Miles
1224 (6)	Walnut Street Bridge Approaches	New Castle	0.642
1444	South Little Creek Road	Kent	1.334
1465	Legislative Streets	Kent	0.732
1435	Fenwick Island Bridge Approaches	Sussex	0.594
1505	Wrangle Hill Intersection	New Castle	-----
			3.302
RESURFACING			
1348	Walnut Street (Front Street to 16th Street)	New Castle	0.186
1500	Fourth Street (Market Street to Spruce Street)	New Castle	0.445
1603	State Road to Basin Corner	New Castle	2.184

			2.815
WIDENING AND RESURFACING			
1501	McDonough to St. Georges	New Castle	3.711
1496	Wendall's Corner to Woodland Beach Causeway	Kent	3.745
1519	Kenton to Blackiston	Kent	3.488
1520	Woodside to Rising Sun	Kent	3.661

			10.594
MISCELLANEOUS			
1538	Woodcrest Drainage	New Castle	-----
1544	Kent Drainage	Kent	-----
1559	Miscellaneous Construction	Sussex	-----
1561	Northwood Drainage	New Castle	-----
1596	Drainage: Laws and Edgewood Streets, Bridgeville	Sussex	-----
DIRT ROADS			
1478	New Castle		0.60
1479	Kent		5.14
1480, 1480-A	Kent		18.28
1481	Kent		4.91
1483	Sussex		5.36
1484, 1484-A	Sussex		4.72
1487, 1487-A	Sussex		10.03
1488	Sussex		7.05
1522	Sussex		5.55
1529	Sussex		3.90
1530	Sussex		1.73
1534	Kent		5.51
1535	Kent		5.08
1536	Sussex		5.07
1537	Sussex		5.59
1541	New Castle		1.50
1542	Sussex		6.08
1543	Sussex		4.94
1545	Sussex		4.53
1546	Sussex		2.60
1547	Sussex		5.45
1548	Sussex		5.53
1550, 1550-A	Sussex		9.92
1554	Sussex		3.81
1555	Sussex		2.45
1560	Sussex		2.34
1575, 1575-A	Kent		18.02
1598, 1598-A	Kent		18.78
1606, 1606-A	Sussex		23.32
1607, 1607-A	Sussex		17.16
1608	Kent		23.91
1609, 1609-A	Kent		2.30
1610	Sussex		32.19

			273.35
Total Miles Designed by Plans and Design Division			294.072

REVIEW SECTION

Robert Wetherall, Review Engineer

The expansion in the construction program during the past year has necessitated increased utilization of consulting firms and it must follow that this trend will prevail in the future as we progress with the Interstate System. To meet the increased activities in this area the Review Section was established as the processing agency for work assigned to consultants. The extent to which the use of consultants has increased is apparent when a comparison is drawn between fiscal years 1956 and 1957. In fiscal 1956 consultants designed a little more than one-third of the higher type construction, whereas in the past year they designed approximately seven-tenths of the projects in this category.

Consultant Projects

RECONSTRUCTION			
Contract	Description	County	Miles
800	Concord Avenue	New Castle	0.804
1168	Maryland Avenue	New Castle	1.307
1368	Concord Pike (Talleyville to Pennsylvania Line)	New Castle	2.057
1497	Newark to Limestone Road (including dualizing)	New Castle	4.989
1498	Main Street, Newark	New Castle	1.016
1549	Morrison Avenue, Wooderest	New Castle	0.130
			10.303
WIDENING AND RESURFACING			
1151	Five Points to County Road 38	Sussex	9.081
1422	Stein Highway	Sussex	1.696
1429	Greenwood to Milton	Sussex	7.943
1433	Harbeson to Waples Pond	Sussex	8.280
1446	Maryland Line to Shaft Ox Corner	Sussex	5.651
1489	Ellendale to Milton	Sussex	7.019
1494	Stein Highway	Sussex	2.936
			42.606
Total Miles Designed by Consultants			52.909
Total Miles Designed on Highway Contracts			346.981

Beside accomplishing the work outlined above the Highway Design Section gives assistance to many other state and municipal agencies in the form of surveys, engineering advice or supervision, sketching and blueprint reproduction. During the past year the Blueprint Section produced over 122,000 prints.

BRIDGE DIVISION

J. S. Robinson, Bridge Engineer

The principal functions of the Bridge Division are preliminary engineering studies, the design and preparation of plans, special provisions, and specifications for bridges, culverts, retaining walls, dams and spillways, shore protection structures, tidal water control structures, special drainage projects, and miscellaneous structural designs. Other duties include checking and approving shop drawings and inspection of projects under construction. The Bridge Division also performs the engineering functions for a majority of special legislative appropriation bills designating work to be done by the State Highway Department.

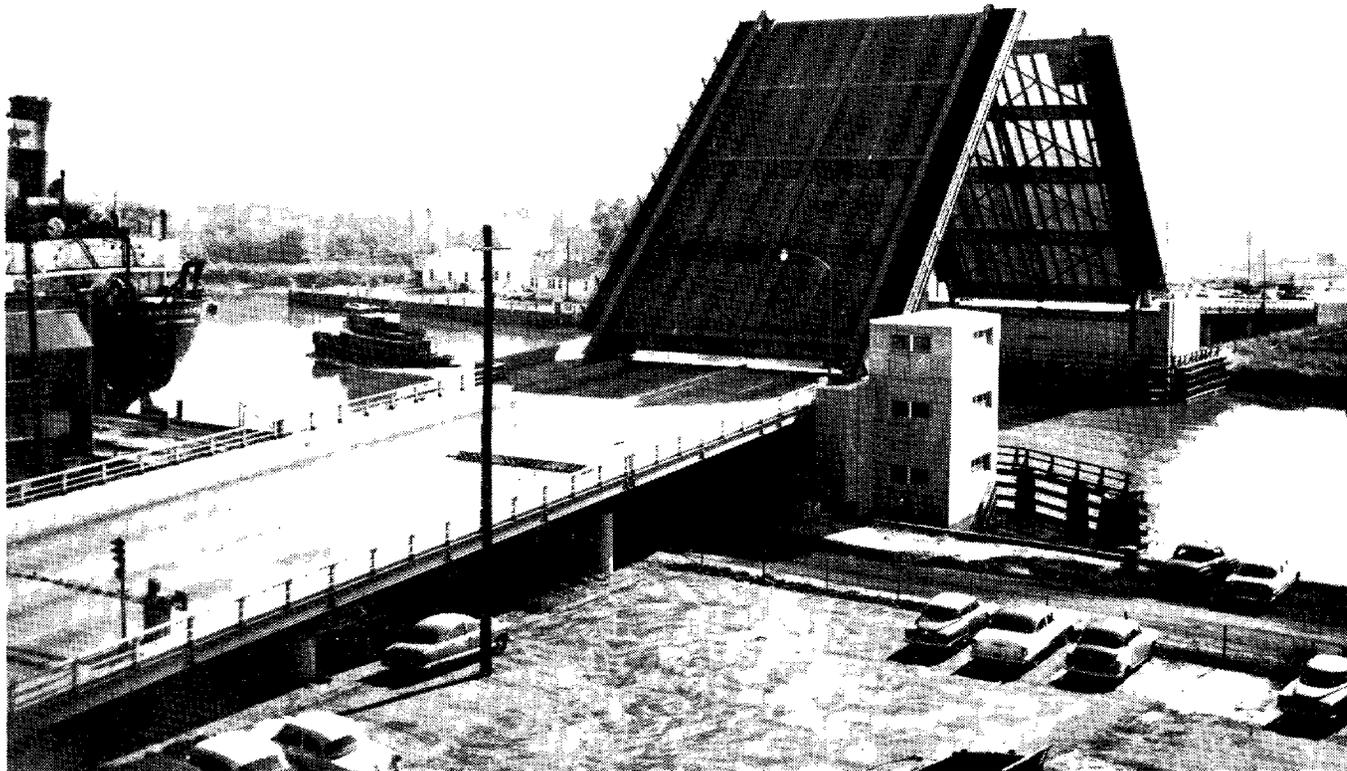
Some of the more important projects handled by the Bridge Division during the report period are as follows:

Contract 1224: Walnut Street Extension, Wilmington

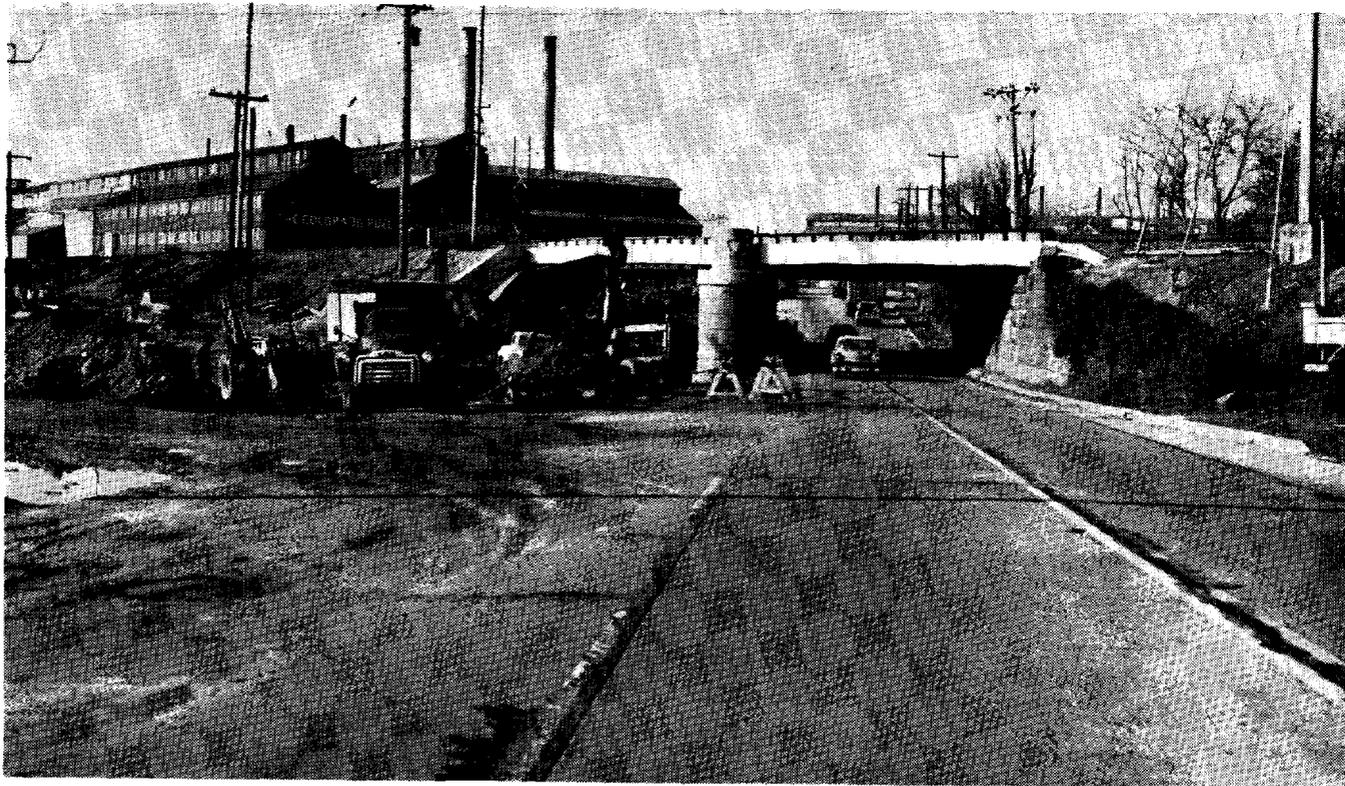
The design, plan preparation, and early phases of construction of this project were described in the previous annual report. The project consisted of five major contracts: namely, Pennsylvania Railroad Underpass, Walnut Street Bridge Substructure, Walnut Street Bridge Superstructure, Stabilization of the South Approach, and Paving. The entire project was completed prior to the end of the current report period. The last project to be completed was Walnut Street Bridge Superstructure, which was completed and accepted on May 10, 1957.

Contract 1315: Naaman's Road Improvements

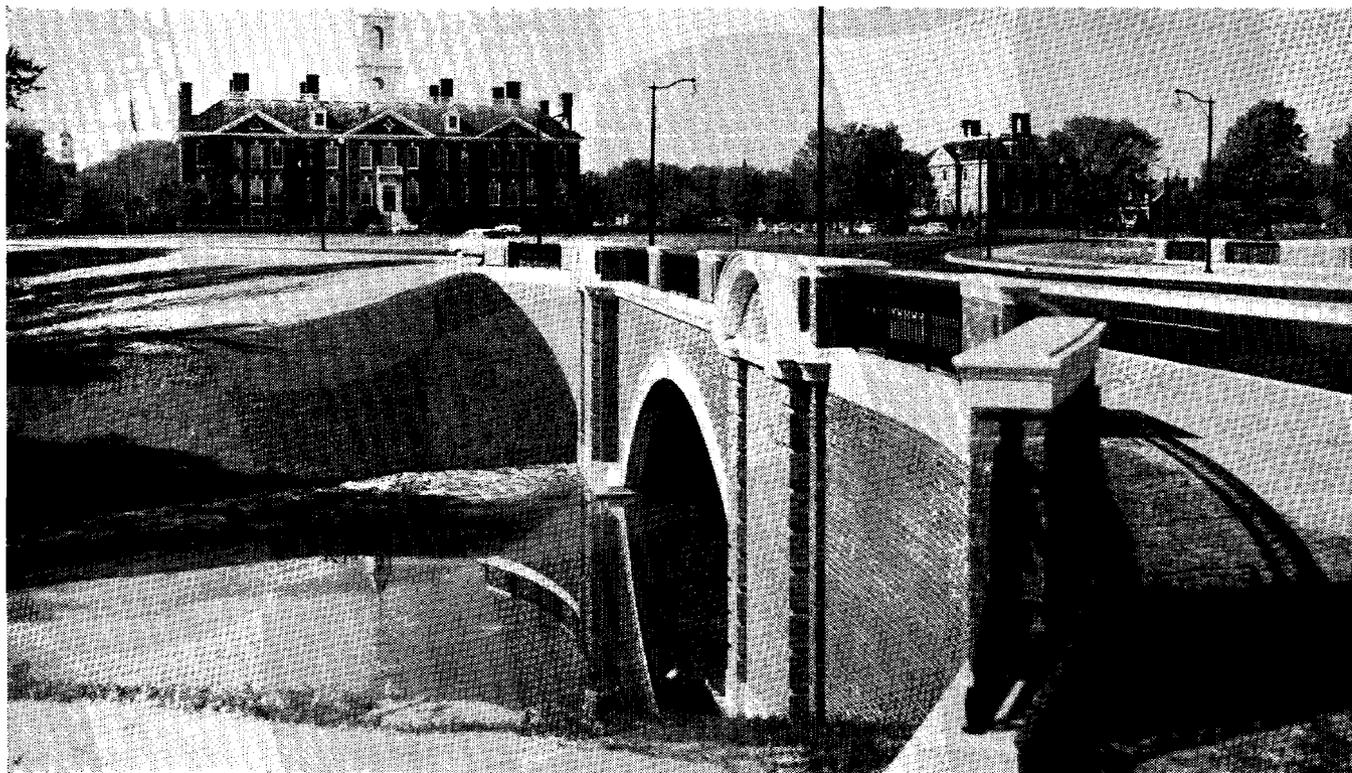
This project provides for the construction of a new railroad underpass near Naaman's Road, the widening of two major bridges, and the conversion of the Philadelphia Pike to a four-lane highway throughout the length of the project. The railroad underpass was approximately 95% complete at the end of the report period. During fiscal 1957 a contract was prepared for the construction of a detour road through the east opening of the new underpass in order that underpinning work and utility relocation work could be performed in the west opening. Plans and specifications were prepared for the widening of the two major structures and the conversion of the Philadelphia Pike to a four-lane facility. These plans and specifications were approximately 90% complete at the end of the fiscal year.



Walnut Street Bridge, Wilmington.



Reconstruction of underpass on U. S. Route 13 at Naaman's Corner.



Court Street Bridge, Dover.

Contract 1435: Fenwick Island Bridge and Approaches

This contract is located in Sussex County, approximately three-fourths mile west of Fenwick Island on County Road 58. The major part of the contract consists of the construction of a bridge across "The Ditch," a narrow tidal waterway connecting Little Assawoman Bay in Delaware, with Assawoman Bay and Isle of Wight Bay in Maryland. The existing bridge is an obsolete creosoted timber structure, which has been placed under a loading restriction for some time due to its age and weakened structural condition. The new bridge will be located on an improved roadway alignment, north of the existing structure.

The new bridge will have an overall length of four hundred and forty feet, with a clear roadway width of twenty-eight feet between curbs, and two sidewalks, each four feet six inches wide. Reinforced concrete parapets, surmounted by aluminum railings, will be provided for the protection of highway and pedestrian traffic. The bridge superstructure will consist of precast, prestressed, reinforced concrete deck members, with a bituminous roadway wearing surface. The contractor was afforded a choice between two alternate superstructure designs; each involving the use of precast, prestressed, reinforced concrete beams or girders as the basic span elements. This type of construction was recently introduced into this country from Europe and has since found increasing favor and acceptance in modern bridge design. The bridge superstructure consists of two reinforced concrete abutments supported on cast-in-place concrete piles, and ten pile bents, each composed of eight cast-in-place concrete piles with a reinforced concrete pile cap. Eight of the bents are also provided with a reinforced strut at low-water elevation. Upon final completion of the combined bridge and roadway plans, the contract was awarded on June 19, 1957, to George & Lynch, Inc. of Wilmington, Delaware. The completion of this project will satisfy a long-felt need for a safe, adequate bridge crossing at this location and will greatly facilitate the movement of peak summer traffic between the coastal resort areas and the interior.

Work Performed By Bridge Division On Other Highway and Bridge Projects:

Contract	
1444 (5)	S. Little Creek Road - New Bridge
1503	Harrington-Whiteleysburg -- Bridge Widening and Drainage
1496	Wendalls Corner -- Woodland Beach Causeway -- Bridge Widening
1398	Bellevue Road - New Drainage Structures
1556	Kitts Hummock Dikes - Complete plans and specifications
1565	Slaughter Beach Shore Protection - Ditto
1527	Lewes Beach Shore Protection -- Ditto
1624	Improvement of Assawoman Canal - Ditto

1573	Milford Bridge Electrical Repairs - Ditto
1427	Lewes Bridge Electrical Repairs - Ditto
1384	Becks Pond Dam -- Ditto
1459	Horseys Pond Dam -- Ditto
1461	Ingrams Pond Dam -- Ditto
1493	Collins Pond Dam -- Ditto
1494	Stein Highway - Bridge Widening
1497	Kirkwood Highway - 4 New Bridges
1424	Greenwood-Ellendale - Bridge Widening
1446	Shaft-Ox Corner - Maryland Line Ditto
1368	Concord Pike - Bridge Widening
1151	State Route 14 - Five Points to Co. Road 38 - Bridge Widening
1558	Woodland Beach Causeway - Boring Contract and Study
1574	Stanton Underpass Drainage - Study and Contract Plans
1562	St. John River Bridge Repairs Complete plans and specifications

Repairs and Replacements of Small Bridges and Culverts:

The Department has authorized funds to be used for a program of repairs and replacements of small, inadequate bridges and culverts throughout the State. Where possible these replacements are made by using pipe culverts. During the report period the necessary field data were obtained, plans and specifications were prepared, and contracts were awarded for six projects which were located in several areas throughout the State. Also in this category were numerous replacements and repairs of small structures on the dirt road program. It is considered that this is a very worthwhile program and should be continued until all small, inadequate structures are replaced with facilities with adequate waterway areas, roadway widths and load capacities. Also plans and specifications were prepared and contracts awarded for the painting of four steel bridges.

TRAFFIC AND PLANNING DIVISION

D. K. Witheford, Traffic and Planning Engineer

As preliminary planning of Interstate Highways in New Castle County gained momentum, the effects were felt immediately by the Traffic and Planning Division. The greater part of the Traffic and Planning Engineer's time was necessarily devoted to participation in the development of preliminary design and cost estimates and in preparation for and participation in meetings and hearings. Much of the staff's time was devoted to preparing detailed traffic studies, estimates, and maps and reports in conjunction with the Interstate Highway planning.

Many special studies were made in addition to the regular work functions performed during the year.

A summary of these activities follows:

Traffic Engineering

To determine a solution for existing traffic problems or to plan for proposed construction, the Traffic Engineer and assisting personnel engaged in numerous traffic studies of various types. Some of the categories were:

- Interstate System Traffic Studies
- Highway Lighting Studies
- Municipal Traffic Studies
- Development of a School Zone Policy

The studies for communities went from the level of investigating sight distance restrictions to overall surveys of volumes, parking and congestion, with comprehensive reports and recommendations.

Other activities included varied traffic studies for suburban areas, speed, accident, sign and miscellaneous complaint investigations. Highway exhibits for the Kent-Sussex Fair, Interstate Highways, Delaware Highway Day and Engineers Week were planned and displayed.

A. Traffic Signals

During the year there were 34 requests for traffic signals requiring detailed investigations. Studies initiated by the Division were conducted at 18 additional locations to determine the advisability of signalization or the application of other corrective measures.

A few of the traffic signal studies were:

- Newark Signal Study
- Smyrna Signal Study
- A report for extra indications and oversize signal faces Maryland Avenue Signal Progression
- U. S. Route 13, Wilmington Manor Signal Progression

As a result of these investigations, 18 new traffic signals were installed and 14 others were altered. The changes involved replacing signal heads, adding extra indications, relocating detectors, installing pedestrian push-buttons and coordinating the timing of separate intersections.

New equipment first used during this year to facilitate traffic flow were magnetic and radar type detectors, and oversize (12") red signals. The larger red lens is extremely effective on high speed rural highways in providing adequate warning and commanding attention.

Listed below are traffic signals maintained by the State and those for which permits have been granted for operation at industrial entrances:

TRAFFIC SIGNALS IN OPERATION AS OF JUNE 30, 1957

County	Flashing	Manual & Flashing	Fixed Time	Semi-Actuated	Fully Actuated	Speed Control	Permit	Total
New Castle	10	5	16	43	22	2	9	107
Kent	6	0	4	10	5	0	2	27
Sussex	15	0	1	5	0	0	1	22
Total	31	5	21	58	27	2	12	156

TRAFFIC SIGNALS INSTALLED DURING 1956-1957

Location	Date	Type
Faulkland Road and Montgomery Drive	August 1956	2 Phase, S. A.
U.S. 13 and Delaware Route 10	October 1956	Flasher
Philadelphia Pike & Commonwealth Avenue	October 1956	2 Phase, S. A.
Marrows Road and Delaware Route 273	October 1956	Flasher
Marsh and Carr Roads	November 1956	2 Phase, S. A.
Rogers Road and Hastie Drive	November 1956	Manual and Flasher
Wrangle Hill Intersection	November 1956	3 Phase, S. A.
Birmingham Avenue and Boxwood Road	December 1956	Fixed Time
Philadelphia Pike and Holly Oak Road	December 1956	2 Phase, S. A.
U.S. 13 in Millsboro	December 1956	2 Phase, S. A.
Kennett Pike and Hopeton Road	January 1957	2 Phase, Pedestrian
Philadelphia Pike and Silverside Road	February 1957	2 Phase, S. A.
U.S. 13 and Delaware Route 6	March 1957	2 Phase, S. A.
Delaware Route 71 — Middletown	April 1957	Flasher
Delaware Route 71 — Middletown	April 1957	Flasher
U.S. 13 and Delaware Route 16 — Greenwood	June 1957	Flasher
New Castle Avenue and Landers Lane	June 1957	3 Phase, S. A.
Barley Mill Road and Center Road	June 1957	2 Phase, S. A.

A traffic signal school was held in March for all personnel connected with signal work to acquaint them with new equipment and methods and to discuss problems in this phase of traffic work.

B. Signs

Sign work is a constantly increasing responsibility of the Division. With added mileage in suburban developments, with added volumes of traffic on the highways, and with added numbers of tourists entering or passing through the State, the need for more and better signs is expanding. The national trend toward larger, more distinctive guide and warning signs is reflected in our increased use of oversize signs and the experimental use of destination signs with green backgrounds at Basin Corner.

During the past year the Sign Shop in Dover fabricated 9092 signs and refinished 2242 existing signs. An informative and attractive "Welcome" sign was placed at the State Line on Route 71 and others are planned for major entrance

points. Portable construction signs for use on contracts were designed and built.

To meet the demands of the three counties for new signs and replacements, plans are being developed for a new Sign Shop layout, with more capacity and working space.

C. Painting

As new highways are constructed and old ones are re-surfaced, center line crews follow up the work with their paint machines. Quantities of paint used in centerlining increase yearly, and New Castle County alone is using approximately 5000 gallons annually. This Spring the operation of a new high-capacity, high-speed, triple-line paint machine has enabled New Castle County to make excellent progress in its centerline work.

In conjunction with the highway painting program, paint and plastic marker tests were conducted at selected highway locations to determine and compare certain qualities of highway marking materials supplied by competing manufacturers.

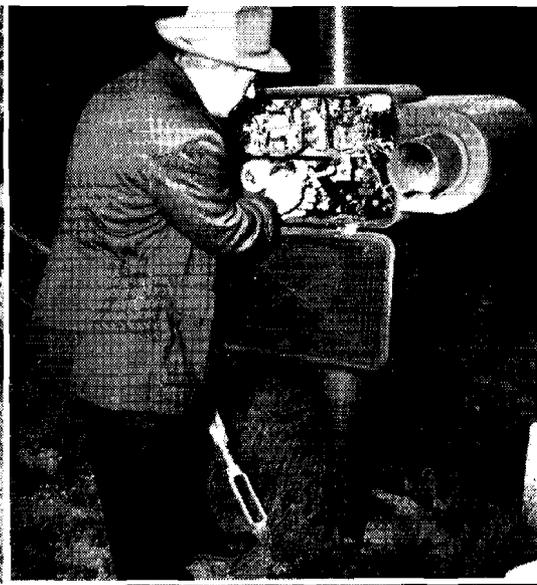
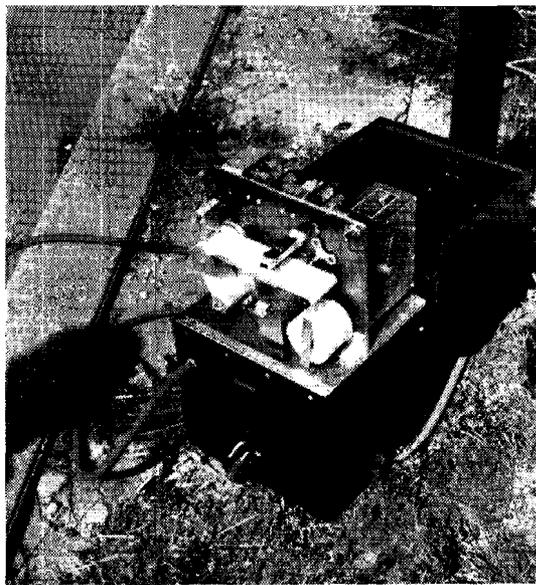
Planning Engineering

Participation in planning the Interstate System network of highways to be constructed in New Castle County accounted for much time and effort. Studies were made to determine property damage and tax losses resulting from different alignments; other studies were made for engineering consultants and the U. S. Bureau of Public Roads. Many maps and reports were produced in conjunction with all phases of this work. Additional time was spent preparing illustrations and gathering data for presentation at public hearings. A booklet entitled "Freeway Facts" was developed and printed to acquaint the general public with the plans, procedures and intentions of the State Highway Department.

Other activities were:
Entrance Studies
Channelization Studies

Development of a plan for State Aid to incorporated towns for street maintenance.

Conferences held by the American Association of State Highway Officials, the Highway Research Board and Insti-

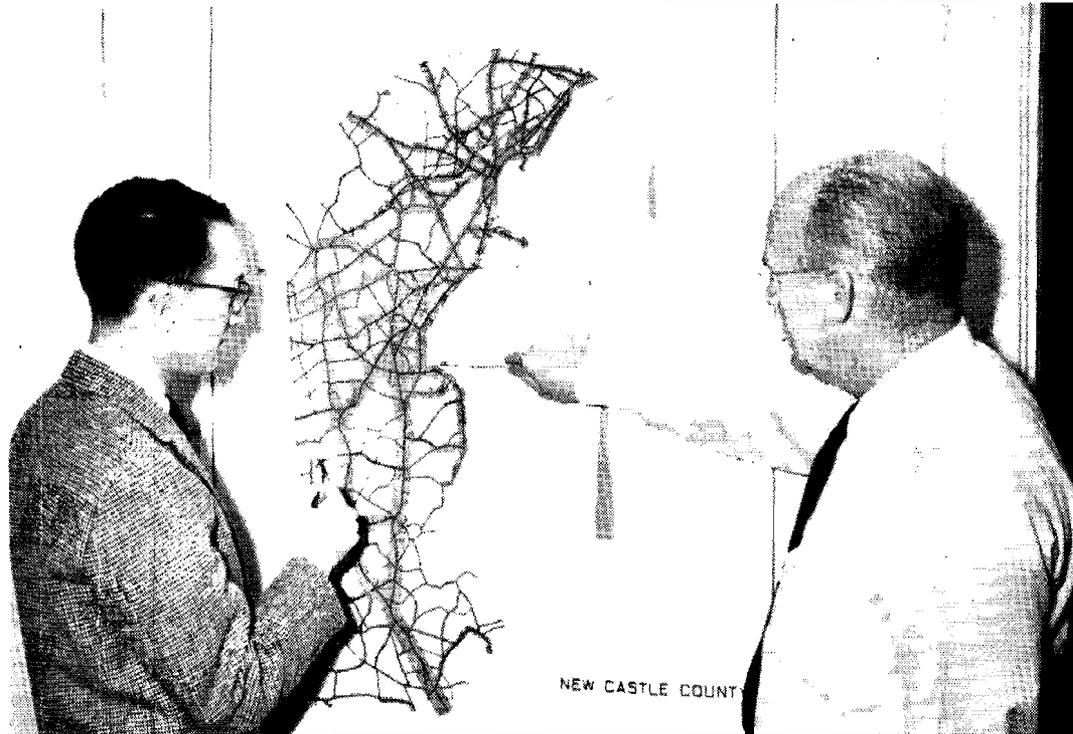


Hourly recording traffic counter.
(Stamps hourly total on type.)

Automatic traffic counter, electric eye type.
(Stamps hourly total on tape.)

Cumulative type traffic counter.
(Shows accumulated total on dial.)

Traffic flow map produced from traffic data.



tute of Traffic Engineers were attended. Questionnaires were completed and other data requested by these Associations were supplied. Personnel of the Division both attended and instructed at the University of Maryland two-week geometric design course.

The following operations were a part of the 1956-1957 program:

A. Traffic Density Survey

The statewide machine and manual traffic counting programs were accomplished in accordance with the predetermined schedule. A total of 665 machine counts and 237 manual counts were made at major control, minor control, week-day control, and single count stations. Data is also gathered from 8 permanently located machine counters (7 electric eye type and 1 treadle type). Reconstruction of highways at some of these stations has given the Division the opportunity of improving these operations.

In addition to the regular traffic density program, which was increased 10% in 1957, an increased number of special counts were made. Many turning movement and accident studies were supplied as a basis for intersection design.

Office personnel analyzed and factored traffic data and prepared listings and reports that are widely distributed to offices or individuals both within and outside the State Highway Department.

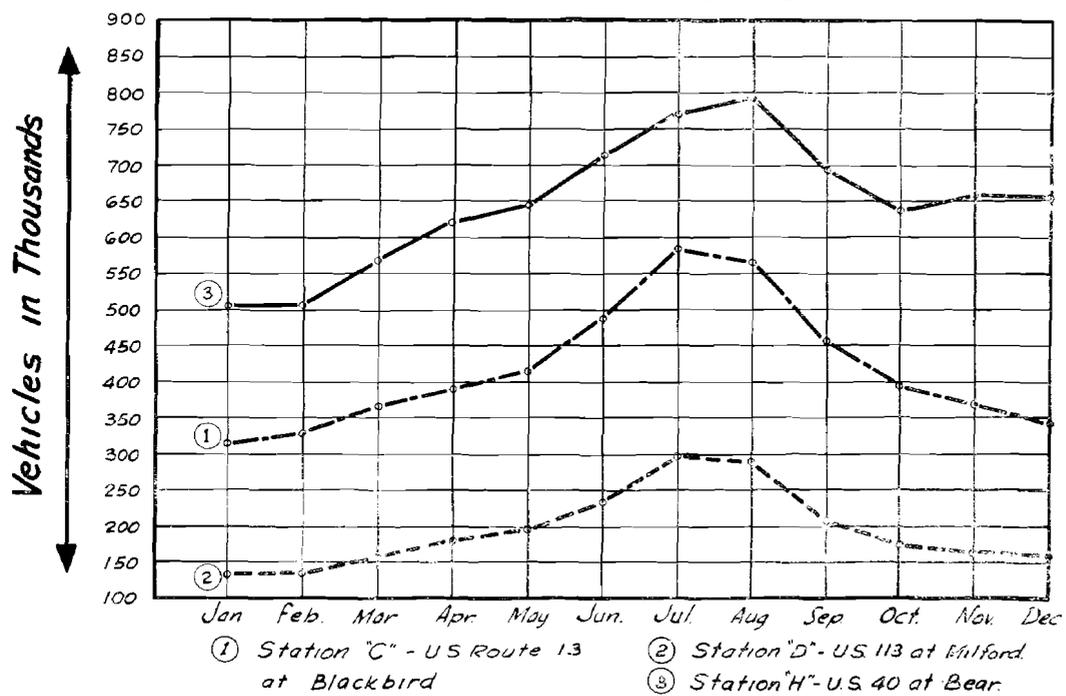
B. Loadometer Study

The field work for this annual study was completed August 15, 1956. Trucks were weighed and other pertinent data collected at eight varied highway locations in order to obtain representative samples of truck movement in Delaware. A total of 856 trucks were weighed. To complete the study the information was then coded and IBM cards punched to record the data. A special Loadometer Study is being accomplished to supply data for the Section 210 Motor Vehicle Study.

C. Fiscal Study

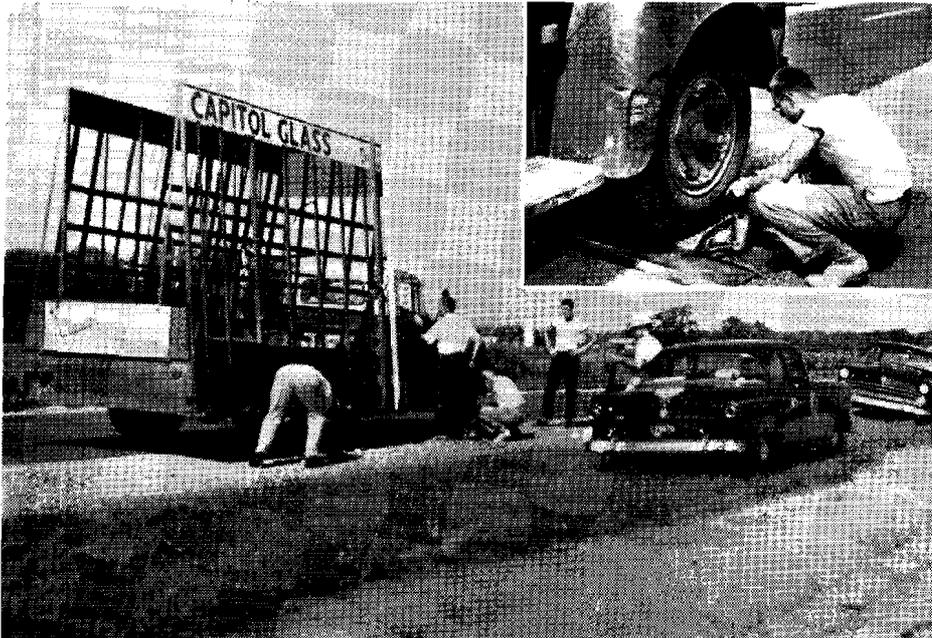
An annual report dealing with receipts and expenditures, bonded indebtedness, and other related information connected with incorporated town streets. The 1956 report was completed in November and forwarded to the U. S.

Total Monthly Traffic At Three Automatic Counter Stations -1956.





Measuring reflectivity of paints at Concord Pike test location.



Weighing trucks and recording data for loadometer study.

Bureau of Public Roads for inclusion in the nationwide compilation.

D. Sufficiency Study

Periodic studies to determine by a system of numerical ratings, developed from field trip data, the sections of highways in need of improvement and to establish construction priorities. Except for some coding and punching for IBM records, the Secondary System Study was completed during the year.

E. Road Life Study

A progressive study of the various highway systems in Delaware recording construction mileage from the earliest date that records are available to the present date that records are available to the present date, or to the date when a road has been retired. Details of construction or reconstruction costs are recorded graphically in book form and on IBM cards.

F. Section 108(d) Report

A detailed major estimate of the cost of completing the Interstate System in Delaware in accordance with Section 108(d) of the Federal Aid Highway Act of 1956. This report was completed in June 1957 and forwarded to the U. S. Bureau of Public Roads. While the actual cost estimate was provided by engineering consultants, close support was given by the Traffic and Planning Division, and the reports were prepared in this office.

G. Section 210 Study

A detailed study involving several reports outlined under Section 210 of the Highway Revenue Act of 1956 as follows:

Phase 1—Motor Vehicle Study

Phase 2—Cost to Improve the Several Highway Systems

Phase 3—Benefit and Analysis

The fact that a possibility of 500 separate detailed tables may be required to complete Phase 1 illustrates the complexity of the report in its entirety. Phase 1 and Phase 2 of this study were started during the fiscal year and progressed satisfactorily.

H. Statistical Tables

The following annual statistical tables were completed and forwarded to the U. S. Bureau of Public Roads:

- PR-531—State Highway Income
- PR-532—State Highway Expenditures
- PR-541—State Highway Obligations Issued and Allotment
- PR-542—Status of State Highway Debt
- PR-544—Future State Highway Debt Service Requirements
- PR-502—Highway Mileage Analysis Schedule
- PR-505—Existing Surface Mileage by Type, Width and Average Daily Traffic
- PR-506—Existing Mileage of Surfaced Highways by Traffic Lanes and Access Control
- PR-522—City Street Mileage by System and Surface Classification
- PR-523—City Street Mileage by Surface and City Size Group
- PR-528—Summary of Existing State and Local Roads and Streets
- PR-529—Summary of Designated Federal Aid Highway System Mileage
- PR-556—State Motor Fuel Tax Collections and Disposition of Receipts
- PR-551—Motor Fuel Consumption
- PR-561—State Motor Vehicle Registrations, Registration Fees and Miscellaneous Receipts
- PR-566—State Motor Vehicle Registration Fees and Miscellaneous Receipts and Dispositions
 - A Supplemental Analysis of Construction Expenditures
 - An Analysis of Miscellaneous Receipts
 - A Statement of Appropriations and Expenditures
 - A Statement of Maintenance Costs by Counties
 - A Financial Summary for the Delaware River Crossing

I. Mapping

Various types of maps are available at the Traffic and Planning Division Office, and 1218 maps were sold to individuals, firms and Government offices. Many additional maps were used by the Highway Department Divisions in the performance of their duties. Approximately 32 thousand copies of the free Official Delaware Highway Map were distributed by this office and the Delaware State Development Department.

The following maps were revised during the year:

- County Maintenance Maps, Scale 1"=1 Mile
- County Maintenance Maps, Scale 1"=2 Miles
- State General Highway Map
- Official State Map of Delaware
- County Traffic Flow Maps

Other activities included preparation of the Detour Bulletins and maps, maps in conjunction with the Interstate System planning, checking and recommending corrections to various commercial map makers and other miscellaneous sketches.

The following maps are available at the Traffic and Planning Division Office, 152 South State Street, Dover:

Type of Map	Size	Approximate Scale
County Maps:		
Maintenance Maps	36"x48"	1"=1 mile
	18"x24"	1"=2 miles
Maps showing Division of Hundreds	18"x24"	1"=2 miles
Traffic Flow Maps	36"x48"	1"=1 mile
State Maps:		
State General Highway Map	30"x55"	1"=2 miles
Delaware Official Highway Map	18"x30"	1"=3 1/2 miles
Incorporated Town Maps:		
Maps of 51 cities and towns	20"x27"	
	10"x13"	Scale varies
Book of 51 Maps	10"x13"	varies

Other Activities

A. Hauling Permits

Hauling permits issued during the 1956-57 fiscal year were:

	Number of Permits	Cost
Heavy Hauling	7119	\$27,884.83
30-Day Piling	391	4,887.50
Trip Piling	138	359.50
House Moving	328	835.00
House Trailers	659	1,721.28
Free	564	.....
Totals	9199	\$35,688.11

Oversize and overweight hauling continues to be an increasing problem for this office and for the Highway Department generally.

The constant trend toward longer and wider house trailers and increasing house moving on the highways are two problems to which more stringent moving regulations should be applied. Compared with most states Delaware is particularly lenient with oversize and overweight movers on its highways.

B. Outdoor Advertising

Responsibility for Outdoor Advertising permits governing placement of signs along the highways was transferred to the Traffic and Planning Division on September 1, 1956. During the fiscal year 1956-57, permits issued for new signs or renewals of permits for existing signs amounted to 2375, with fees totaling \$2,375.

Summary

The chart showing the increase in traffic volumes from 1941-1956 at one of the permanent counting stations reflects the increased work load placed on the county traffic divisions in their work of signing, signals and pavement marking. Similarly, the planning activities of the Division become greater as increased funds for construction become available.

Since construction cannot keep up with the pace of traffic growth, it is essential that all the techniques of traffic engineering be called in to maintain satisfactory standards of operation and safety on Delaware highways. This work needs to be intensified, particularly with the pending impact of the Interstate Highway program. To insure that new construction meets the needs of Delaware highway users most effectively, and further to prepare for the impact of the Interstate program, planning functions must also be stepped up. Greater use of available information and of fact-finding surveys should be made to determine and prepare for future problems and to suggest practical solutions for them.

The following tables in the Appendix list data from records in this office:

Table III: Mileage of Streets and Highways maintained by the State Highway Department, listed according to surface type.

Table III: Mileage of Streets and Highways listed according to system classification.

Table IV: A Comparison of Traffic Volumes Recorded by Automatic Counter Stations from 1941 to 1957.

RIGHT OF WAY DIVISION

H. L. Keene, Chief Right of Way Agent

During the past year the Right of Way Division has been reorganized to function on a County system. Each of the County organizations is now composed of a District Right of Way Agent, together with a negotiating staff and clerical staff. This arrangement has served well and a great volume of work has been processed since its inception. The Chief Right of Way Agent, with offices in Dover, coordinates the work of the three Counties.

Although it would be nearly impossible to point up any one item of right of way procedure as the one important item, one of the most time consuming and tedious tasks of the past year has been the acquisition of right of way for the Dirt Road Construction Program. In the Dirt Road Program we have been faced with the task of acquiring the necessary land in the shortest possible time. Jobs are advertised in less than one week after we have received strip maps. Were it not for the fact that on a number of jobs negotiations were started immediately upon the assignment of a contract number, we would have been in the position of delaying the contractor.

Plans are now underway whereby Right of Way procurement for Dirt Roads can be expedited. The present policy of obtaining easements has worked well. However, an agent spends as much time in having easements executed as he would in making an outright property purchase. In addition to this we find that we are actually flooding the County Land Recorder with these easement forms. The plan now being considered is one whereby the plans of the individual roads will be placed on record after having attached thereto a "Dedicatory Sheet" on which each of the owners abutting the road will have affixed his signature under a paragraph which will state that: "We, the undersigned owners hereby dedicate for public use, etc , etc." This system we feel would be less time consuming on the part of the negotiator, would place one paper of record in the Recorder of Deeds Office in place of up to thirty, and would greatly relieve the work-load of the clerical staff.

The question of Eminent Domain Proceedings instituted against owners of lands along dirt roads poses a problem. Constant attention is being given to the resolution of this problem, which has occurred in relatively few instances.

As in all fields of highway endeavor, the Federal Aid Interstate System of Highways looms very large in the field of Right of Way Procurement. Even though we have not yet felt the full impact of this gigantic undertaking, the preparation and planning for its eventual construction has brought with it a multitude of problems. Some of these are: estimating expenditures for property purchases, arranging for appraisers, presenting and selling of the idea to boards and organizations, answering the unlimited number of questions from owners of property affected by the construction, and in some cases taking option contracts on lands and buildings in the line of construction.

It is thought that the act of holding the lands under option will have a tendency to establish sales prices for future negotiations; therefore, when and where a property can be acquired on the open market it is recommended that this be done to establish bench marks of value from which we can pursue our future dealings.

The Bureau of Public Roads has established as a criterion for negotiations the "Market Value" of a property. We want to point out here that market values, as such, are subject to the demands placed on that particular "market". If, then, the real estate market "demand" should exceed or pinch the "supply", it is only natural that the market would rise. Knowing that this will be the case, we will have to complete our dealings based on the market value at the exact time of the one particular deal. This will actually be a "sliding scale" market, which will fluctuate upward with the demand placed on that market. From appearances it would seem that real estate values in the Wilmington Metropolitan Area have levelled for the time being, although lands bordering on recreation areas have risen considerably, and from all appearances will continue to rise.

During the year the Right of Way Division has processed the following:

Options obtained	1166
Easements (all types)	1452
Agreements (Slope-Trespass-Ditch)	711
Descriptions written	245
Deeds executed	224
Releases executed	112
Condemnation Complaints filed	32
Houses moved	29
Borrow Pits purchased	3

Parcels of State Lands sold	6
Road vacations	4
Property Plats prepared	13
Total Right of Way Expenditures	\$980,590.89

Settlements of Right of Way claims are being handled as rapidly as possible. We are hampered somewhat in the preparation of large descriptions. Although the title searches have been handled in good time during the past year, by projecting our thoughts to the proposed program for the coming year it is easily seen that the legal work can and likely will become a bottle neck.

The major holdup in providing access to the contractor is the present fad of opposing attorneys attempting to stall progress of the work by means of pre-trial arguments causing members of the Department to prove the necessity of the proposed takings. This court procedure is very tedious and time consuming. It is recommended that appropriate legislation be sponsored which will grant the state the right to procure advance right of way and lands in excess of our immediate requirements.

DIVISION OF TESTS

S. S. Scarborough, Testing Engineer

The responsibilities of the Division of Tests are primarily the inspection, testing and approving of all materials used by the Highway Department. However, there are other duties such as foundation drillings and designs, drilling and designs for buildings, surveys of existing sub-base, deep marsh borings, and preparation of Special Provisions involving materials. During the past year this Division has also completed rewriting the Standard Specifications and has distributed 1,010 copies to every State in the United States and twenty foreign countries.

The "Dirt Road" program has necessitated training of additional personnel and expansion of our facilities to meet this large undertaking. The Division has been organized into three sections: Soil, Asphalt and Concrete, and each section has been sub-divided. In this manner, work can be distributed more quickly and results obtained more accurately and without delay. Each section head is experienced in the work, and is held responsible for the activities of this section.

The following tabulation shows the number of tests, tons, cubic yards and work completed:

SOILS SECTION

Porter Sampler (foundation and marsh boring)	1,888 feet
Deep Marsh Borings (supervised)	2,505 feet
Borrow Pits tested	119
Laboratory Analysis	7,394
Field Density tests	1,119
Sub-Grade Investigations	74.5 miles

The Soils Section tested, inspected and supervised the placing of approximately 750,000 cubic yards of borrow.

ASPHALT AND CONCRETE SECTIONS

Material Tested	No. Tests	Represented
Asphalt (all types)	692	5,704,250 gallons
Portland Cement	471	247,130 barrels
Coarse Aggregate	2,010	548,660 tons
Bituminous Hot-Mix	986	218,660 tons
Concrete Cores	744	—
Brick	12	—
Guard Rail Posts	—	940
Lumber	—	37,089 board feet
Piling	—	2,444 feet
Concrete Block	10	—
Paper	23	—
Pipe	204	213,091 feet
Expansion Joint Material	21	—
F. A.	603	102,282 tons
Water	41	—
Miscellaneous	136	—
Air Entraining	554	—
Concrete Cylinders	4,623	—
Central Mix Concrete	—	62,483 cubic yards
Truck Mix Concrete	—	9,069 cubic yards
Job Mix Concrete	—	93,212 cubic yards

In addition to the normal year's duties the older members of the Division of Tests spend an unusual percentage of their time in training new employees. Our average turnover of employees is 22%. This is caused by a number of reasons: tedious tasks, dirty and dusty work, and long hours. With this high percentage of turnover it necessitates continual training and schools as often as we can have them.

Our Division makes a constant study of new equipment, both for laboratory and construction. We have purchased a new "Porter Sampler" which enables us to drill and sample materials to depths exceeding 100 feet. We have purchased a "Hubbard Field" apparatus which enables us to design and predict stability, voids, moisture and Bituminous materials on stabilization projects.

Research work in the laboratory has been very active. For example, we have experimented with nylon fabrics in Bituminous Concrete, steel splinters in Bituminous Concrete, light weight Portland Cement Concrete and Bituminous Concrete, an extensive exposure series of structural steel paint panels, suitability of slag as a coarse aggregate in Bituminous Concrete and development of a wet coating and stripping tests for Asphalts.

Field research that we have participated in or directed includes the following projects: Pull tests measuring skidding resistance of different types of pavement surfaces, use of a liquid latex in Bituminous surface treatment, installing two epoxy resin skin patches, experimental pit-run Hot-Mix Asphaltic Concrete, experimental Pea Gravel in Hot-Mix Asphaltic Concrete, and using nylon fibres in Hot-Mix Asphaltic Concrete.

RESEARCH DIVISION

C. O. Simpson, Research Engineer

The Research Division, established on April 1, 1956, has the following principal functions: the prequalification of bidders, handling special problems allied with the work of the various Divisions, acting as liaison between the University of Delaware and the Department on special research work, and representing the Department on special assignments.

Prequalification of Bidders

The policy on prequalification of bidders became effective July 15, 1956. Due to the current volume of work and the expected increase in the volume of the work in the future, the Department established a prequalification system for contractors similar to the prequalification systems of Maryland, Pennsylvania, New Jersey and Virginia. The policy established is the result of the joint efforts of members of the staff of the Department and members

of the Highway Division of The Associated General Contractors of Delaware, Inc.

From July 1, 1956 to December 31, 1956, seventy-seven contractors were prequalified for various items of work. From January 1, 1957 to June 30 1957 eighty-seven contractors were prequalified.

Beach Erosion

On November 14, 1956 the Research Division submitted a report on the Delaware Beach Erosion problem, the background, the present and the future considerations, as well as recommendations upon which a legislative program might be based. The report was based upon former reports of the Beach Erosion Board, the Corps of Engineers of the United States Army, and the experience of the Highway Department staff.

Little Mill Creek Drainage

On March 1, 1957 the Research Division issued a preliminary report, "Little Mill Creek Drainage Basin."

The Little Mill Creek Drainage Basin is located west of Wilmington in New Castle County. Since the beginning of the century that portion within the Basin situated between New Road, from Elsmere to Prices Corner and the Richardson Park Road, from Richardson Park to Elsmere, grew rapidly with sub-division and without adequate controls at the time of development with respect to drainage. With the continuing change of land use above this location, from agriculture to residential areas, the flooding problem has been intensified and in the future will worsen.

The report dealt with the problem and set forth recommendations as to the solution and probable costs.

Drainage

On March 22, 1957 a report was submitted reviewing the proposed drainage laws for New Castle County. The purpose of the proposed law would establish a Drainage Board and drainage responsibility. In submitting the report all technical phases of the problem were considered and recommendations were set forth dealing with proposed legislation, similar to that which has been enacted in other States, to enable the correction of present unsatisfactory conditions and prevent similar conditions from developing in the future.

Suburban Development Regulations

The Research Division cooperated with the Suburban Development Division in revising the current regulations, especially those portions dealing with drainage, with the express purpose of preventing flooding within future subdivisions.

Slip-Form Paving

The Research Division cooperated with the Division of Tests in advancing the acceptance of the method of Slip-Form Paving construction.

Highway Beautification

With the completion of Route 13 from Delmar to Dover, a distance of 51.8 miles, the Research Division reviewed existing literature on highway beautification, with the express purpose of planting the parkway. The purpose of the proposed planting is not only to beautify, but to include safety, such as guidance and prevention of headlight glare. Tentative planting arrangements have been sketched upon the former contract plans, and plans for 7.95 miles are about complete.

In addition, the planting of Rehoboth to Five Points is under consideration.

State Lands

A report was submitted to the Beach Committee of the Department for its consideration.

Due to the growth of population of Delaware and surrounding States, and availability of excellent transportation facilities, the vacation population attending the beach areas of Delaware has surpassed all expectations. With this heavy influx of population many problems, which under normal condition would be easily handled, have been augmented to the degree that the future of the State lands must be immediately considered if the present natural condition of the State lands are to be preserved.

The report on this subject makes suggested recommendations as to the future use of the lands and the development of a master plan through cooperation with the Planning Division of the National Park Service.

University of Delaware

The department has for a number of years sponsored certain fields of research at the University of Delaware. The purpose of the research is to gain knowledge which will benefit the Department in the solution of various problems, to aid in the training of young engineers desiring later to become engaged in highway work, to supply knowledge and interchange knowledge with other highway departments and allied organizations engaged in similar activities.

During the past year the Department has received reports on the following subjects:

1. Thermal Expansion of Concrete for Pavements.
2. Prestressed Concrete Highway Slabs.
3. The Stabilization of a Fine Grained Soil Using Low Percentages of Portland Cement and Fly Ash.
4. Model Studies of Beach Erosion.
5. Fly Ash, An Admixture for Concrete Pavements.
6. Engineering Materials of Northern New Castle County.

Delaware River Basin Water Resources Survey

The State of Delaware is participating in the comprehensive survey now being conducted by the United States Corps of Engineers. The survey is primarily concerned with water requirements needed in the future as far as the year 2060. However, in order to arrive at an answer, all phases of life where water is used must be examined.

The four states of New York, Pennsylvania, New Jersey and Delaware are engaged in the survey, and each state is represented on a Coordinating Committee composed of the Corps of Engineers, Federal Agencies, and other interests.

The State of Delaware will submit a report to the Corps of Engineers, so the interests of our State are fully realized. All agencies of the State, County, Municipal governments, and others having an interest in the final report have been directed by the Governor to submit reports to the Delaware Coordinating Committee.

The Research Division in cooperation with the Water Pollution Commission has prepared and distributed an

“Assignment Outline.” Specific problems are outlined, and each group concerned has been instructed to carry out certain phases of the State survey. In order to gather all the information needed to assemble the Delaware Report, ninety-three separate reports from the interested agencies will be needed.

SUBURBAN DEVELOPMENT DIVISION

Gordon Massey, Suburban Development Engineer

The function of the Suburban Development Division is to perform the duties imposed upon the State Highway Department by the Laws of Delaware relating to the acceptance for maintenance of streets within unincorporated suburban communities that have been, or are intended to be, dedicated for public use.

The responsibilities of the Suburban Development Division can be classified into three main categories:

1. Supervision of new housing projects.
2. Supervision as defined under the Suburban Road Laws.
3. Supervision as defined under Senate Bill No. 387.

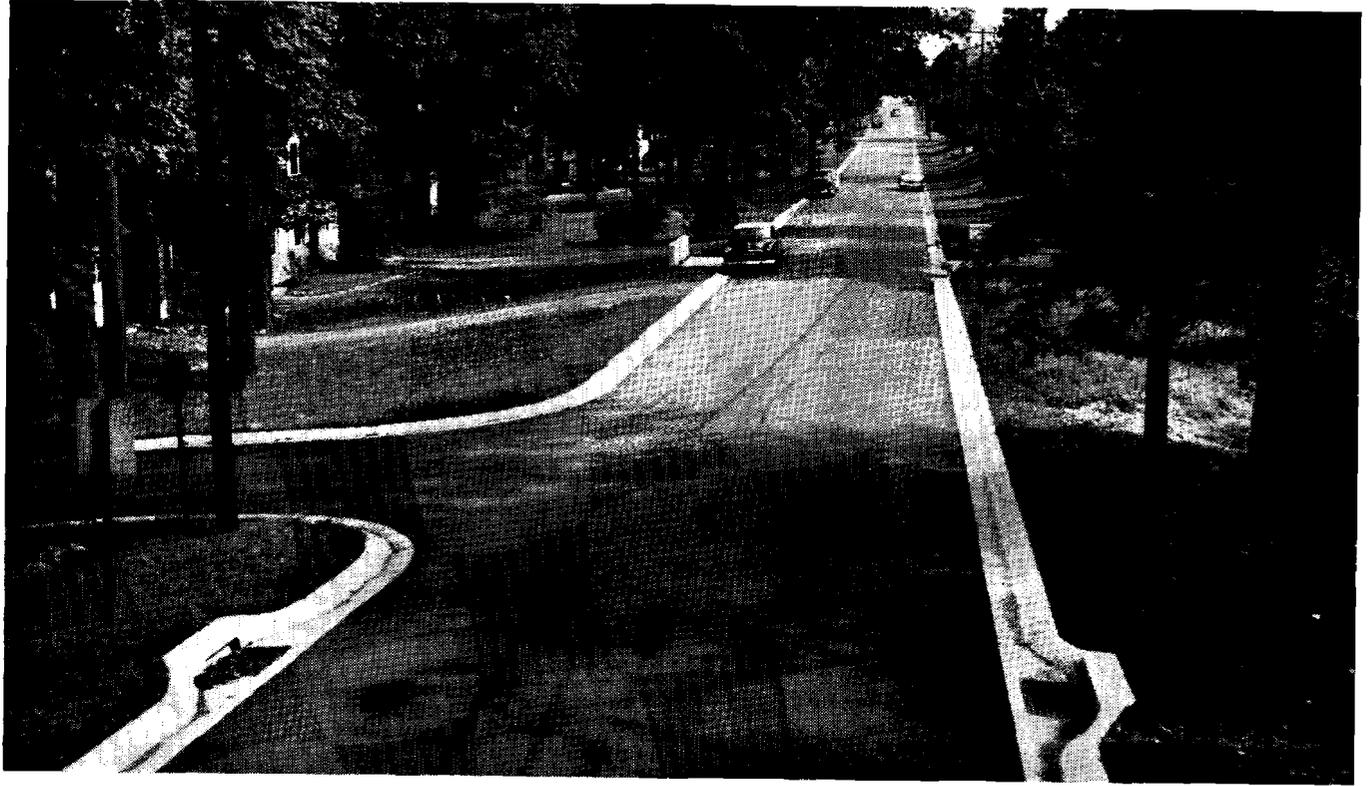
Where new housing projects are concerned the developer posts a performance bond guaranteeing that the construction of streets will be in conformance with Highway Department rules and specifications.

Where the Suburban Road Laws are concerned the freeholders of any unincorporated community may petition the Levy Court for the construction of their streets. When the streets are completed to the Standard Specifications they are accepted into the State Highway System for maintenance.

Where Senate Bill No. 387 is concerned the General Assembly this year appropriated \$1,225,000 to be used solely for the purpose of repairing, maintaining and reconstructing streets and roads, situated in unincorporated suburban communities throughout the State, which were built or created between July 1, 1935 and July 1, 1951.

Streets Accepted

A total of 101.787 miles of streets were accepted into the State Highway Department's maintenance system



Bellevue Road, a reconstructed suburban street.

during the fiscal year 1956-57. A tabulation by contract and development will be found in the Appendix, Table V.

Suburban Road Laws Projects

During the fiscal year the Division has worked on 13 projects having a total mileage of 5.912 miles and an estimated cost of \$428,124.42.

Services of consultants for surveys and design cost approximately \$14,330.00.

Bonded Developments

Since the Bonding Law became effective in 1951 performance bonds have been posted for the following mileage:

Fiscal Year	Mileage Bonded
1951-1952	1.383
1952-1953	19.856
1953-1954	19.024
1954-1955	26.805
1955-1956	22.316
1956-1957	18.852
TOTAL	108.236

Table VII in the Appendix is a tabulation showing the projects for which bonds were received during this fiscal year.

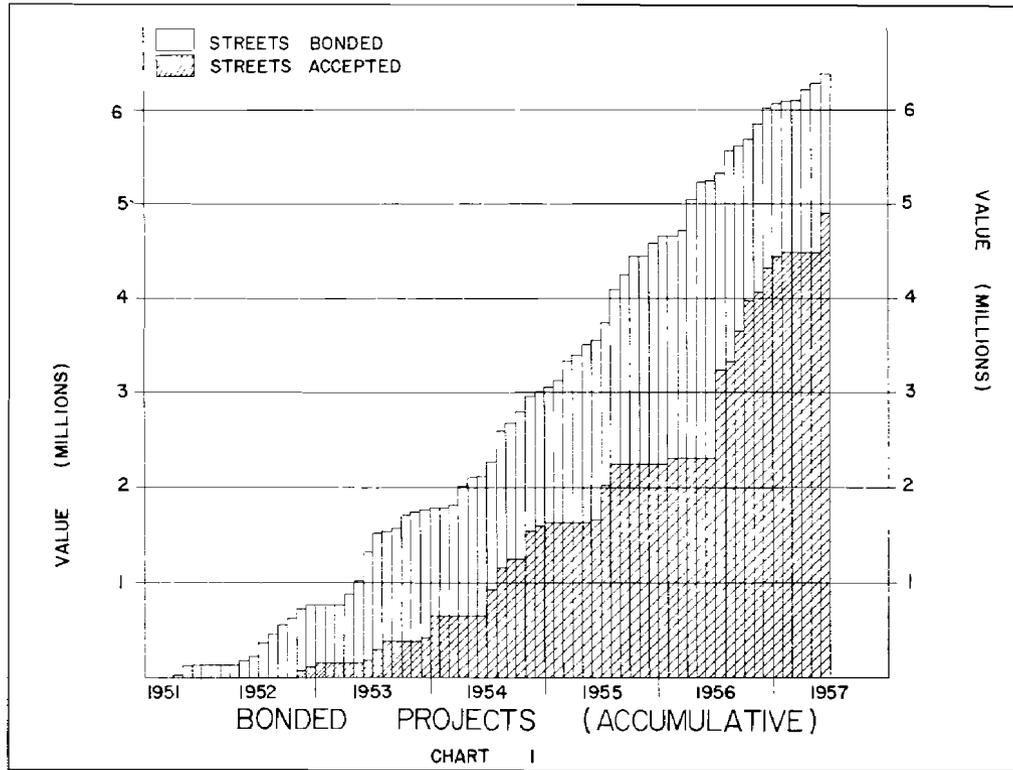
Chart #1 of this report shows the accumulative record of the value of bonded projects, active and accepted.

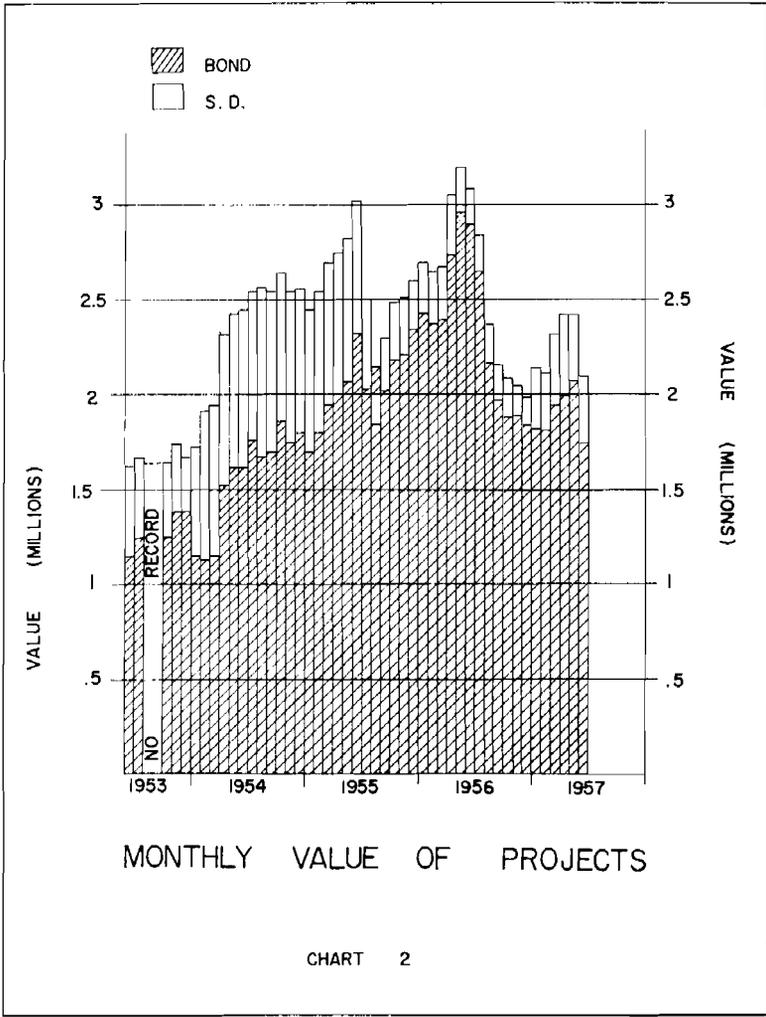
Chart #2 shows the monthly value of projects under bond and those constructed under the Suburban Road Laws.

New Castle County Regional Planning Commission

Since the Suburban Development Division works in conjunction with the Regional Planning Commission of New Castle County, the Suburban Development Engineer has been the State Highway Department voting member since April 1956. The Regional Planning Commission reviews and approves or disapproves all new subdivisions in New Castle County submitted by consulting engineers for the different developers.

During the past year plans have been received for 24.672 miles of streets in 26 new developments.





New plans examined this year for proposed subdivisions in all three counties are listed in Appendix, Table VIII. This list does not include developments previously reviewed, which for various reasons were re-examined by this Division.

A summary of the streets handled in one form or another during the fiscal year as follows:

	Miles	Probable Cost
Suburban Road Laws	5.912	\$ 428,124.42
Bonding Laws	68.384	4,050,215.14
TOTALS	74.296	\$4,478,339.56

Growth and Acceptance of Streets

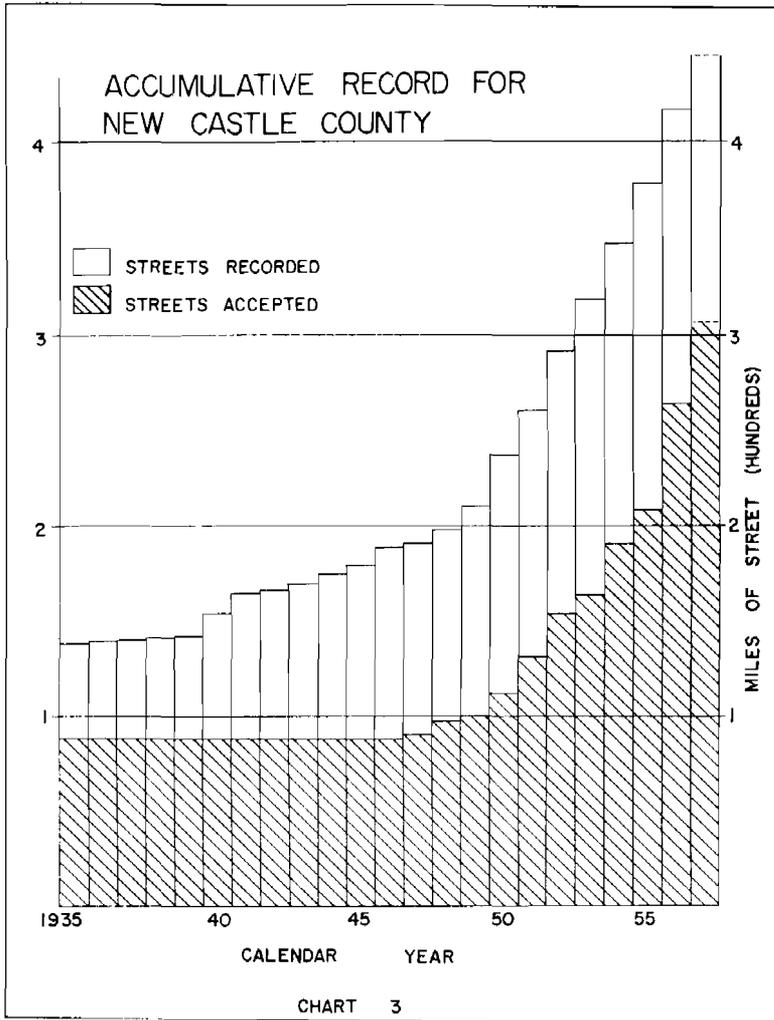
Chart #3 attached to this report indicates the number of miles of streets placed on record and the streets accepted by the Department in New Castle County. Included in the year 1957 are approximately 30 miles of streets accepted under Senate Bill No. 387 into the State Highway Department's Maintenance System. These were streets in developments constructed between July 1, 1935 and July 1, 1951.

Drainage

Adequate drainage design is a major issue in connection with Suburban Development work in the State. The growth of housing and the construction of streets increase the runoff of surface water. New improvements cause water to flow off at a higher velocity, thereby making its control more difficult.

The State needs a coordinating agency with legal powers to enforce controls recommended by professionally qualified drainage engineers. Problems concerning control of storm water are increasing with the increase in population and volume of traffic. Responsibility must be fixed outlining the obligations of property owners, developers, public agencies and public utilities.

At the present time there is an Act before the General Assembly to provide means to finance stream improvements for flood control. This Act would enable the Levy Court to establish regulations and a drainage board to administer the regulations.



During the past year the Suburban Development Division prepared new rules and regulations applying to the construction of suburban development streets. These rules and regulations were distributed to the Engineer Consultants, Developers and Contractors.

The new specifications provide high type streets with adequate storm sewer systems and will effect great savings in maintenance costs over the years. With the required increase in storm frequency design the possibility is lessened that streets and lots will flood and erode. Also, minimum widths of streets have been fixed according to classification.

During the past fiscal year there was an increase in appropriation to \$1,375,000 for the reconstruction and maintenance of streets in unincorporated towns as provided under Senate Bill No. 387. This increase will relieve the individual freeholder from the burden of reconstruction costs in several communities, notably Richardson Park, Holloway Terrace, Stanton Crest and Cranston Heights.

FEDERAL-AID DIVISION

F. W. Vanderslice, Administrative Assistant

During the past fiscal year advertisements were authorized for 106 projects on which 505 bid proposals were received and tabulated. Approximately 5,000 proposals were prepared by the Division.

On July 1, 1956 the status of Federal allotments was as follows: Under Contract \$6,323,087.52; Submitted for Approval \$510,075.00; Approved Program \$1,959,000.00; Available Unprogrammed Balance \$10,535,546.77. In August 1956, Federal funds for the fiscal year 1958, in the amount of \$14,250,856.00, were made available for programming and advancement to construction. On June 30, 1957 the status of Federal allotments was as follows: Under Contract \$9,691,768.93; Submitted for Approval \$5,109,835.00; Approved Program \$1,203,000.00; Available Unprogrammed Balance \$16,623,526.60.

In the past year the following functions were performed by this Division in connection with projects in which Federal participation was requested: Projects Programmed 29; Plans, Specifications and Estimates Presented for Approval 19; Vouchers Submitted—Progress 36, Final 14. Total Reimbursements received from the Federal Government \$3,184,793.08.

The State Highway Department made application to the Commissioner of the Bureau of Public Roads during the past year to come under the Secondary Road Plan. Accompanying the application were the Standards and Procedures which the State proposed to follow on projects coming under the Plan. At the close of the fiscal year the application had been approved and was to become effective July 1, 1957. The transfer of responsibilities from the Federal to State level will require this Division to undertake additional duties in record keeping, accounting, and auditing for all contracts constructed under the Secondary Road Plan.

UTILITIES

E. Powell Smith, Utilities Engineer

The expanding highway construction program has increased the importance of coordination between highway construction and utility adjustment operations.

During the past fiscal year, several steps have been taken towards this end. In April 1957, a Utility Engineer, whose primary function is to handle liaison and to coordinate plans and field problems with the various utility companies, was added to the staff. In New Castle County, where the problem of utility adjustments is acute, a Utility Coordination Committee was formed. Regular monthly conferences are held with representatives of the utility companies, highway contractors and the Division office for the purpose of discussing problems of utility work and for the exchange of information. As a result of these conferences, all interested parties are fully informed of plans and of progress being made. In addition to this regular monthly meeting, a more detailed utility meeting is held prior to the start of each project. At this meeting the contractor's schedule of operation and the scope of the utility work required is fully discussed leading toward agreement of an acceptable plan of operation.

The new Utility Division is intended to minimize interference with highway construction and to aid the various utility companies in their planning and scheduling of construction needs.

PUBLIC RELATIONS

H. C. McSherry, Publicity Director

During the past year the public has been informed of the activities of the Department through the media of news-

papers, magazines, radio and television. A total of 272 news stories were issued to four daily newspapers and 16 weekly papers. In addition, stories were furnished to five newspapers in the metropolitan area of Philadelphia and Baltimore and feature articles were carried in certain professional magazines. Radio and television coverage included the use of the facilities of 10 radio stations and one television station.

In many instances the stories have been accompanied by photographs or sketches. However, it is anticipated that items of this nature will be more greatly utilized during the coming year to more adequately emphasize our program.

In line with the overall policy of providing maximum service, it is our established policy to make every effort to keep the public informed of our programs and the progress being made by the Department in the fulfillment of those programs.

●

OTHER DEPARTMENT ACTIVITIES

The Delaware State Highway Department, in addition to its responsibilities as builder and maintainer of public roads, has certain responsibilities somewhat removed from, but no less important than, highway work. These activities include Mosquito Control, Public Works, State Lands, and Civil Defense.

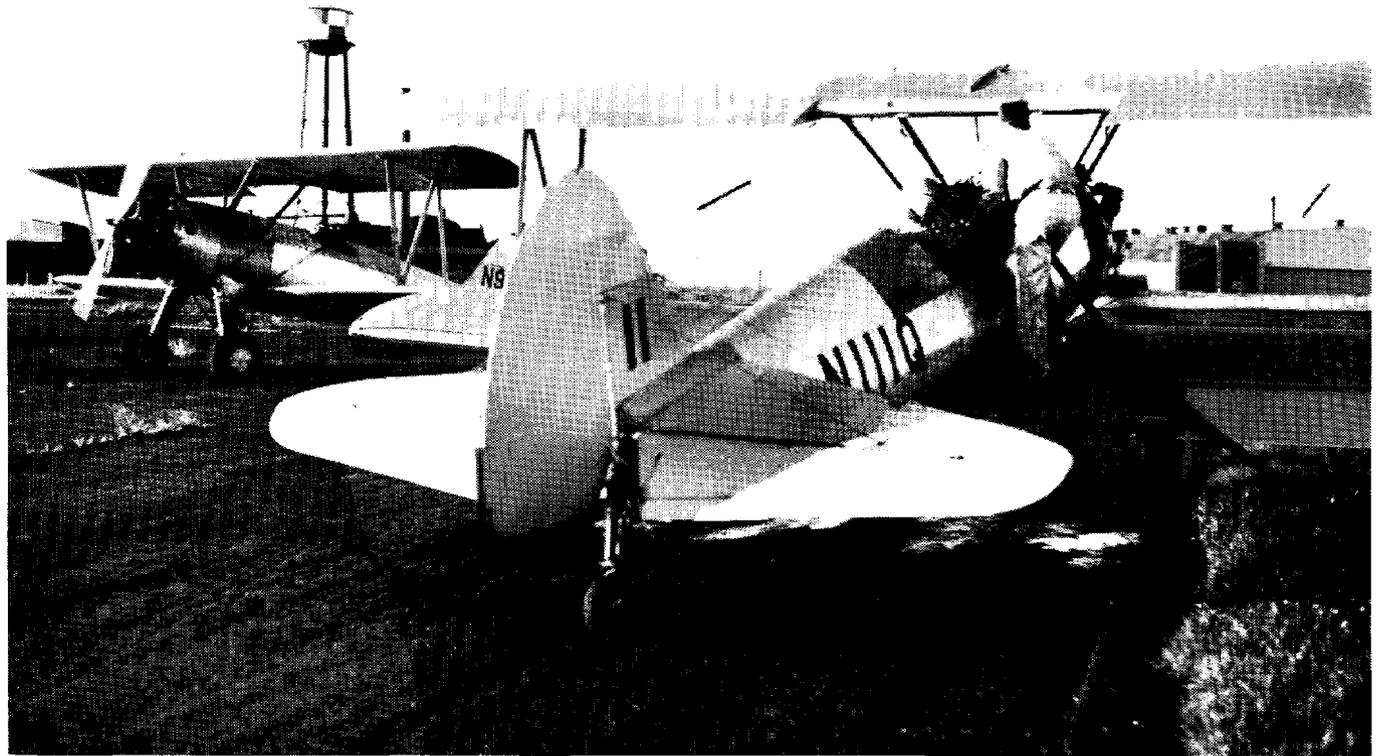
Reports on the work accomplished by these Divisions during the past year are included in this section.

MOSQUITO CONTROL DIVISION

C. D. Murphy, Jr., Superintendent

The fiscal year 1956-57 saw what were undoubtedly the most significant and drastic changes in the activities of the Mosquito Control Division since its incorporation into the State Highway Department in 1939. This applies particularly to the financial aspect of the Division, but notable developments were also effected in the field of research, air-spraying and permanent measures.

The 1956 mosquito season began under adverse conditions and therefore it was not long before a serious situation developed. During June the personnel of the Division had dwindled to five employees, due to the shortage of funds



Refueling Mosquito Control planes.

in the wages and salaries account which had not been augmented as hoped for by a supplementary appropriation from the Legislature. Hence, although the June air-spraying effort was greater than usual and despite favorable rainfall and tidal conditions that prevailed until nearly the end of the month, it was impossible to carry out an effective inspection of the breeding areas. Thus, despite trap collection records, which regrettably ran as much as a week behind actual catches, insecticide application could only be based on estimates of the situation.

In addition to this handicap, the year 1956-57 opened on the aftermath of a large brood of mosquitoes in the Dover area, generated by a heavy rainfall about the middle of June. Again on July 15 a peak in trap records was attained, resulting from high tides in early July. These two broods were not effectively eliminated until late in the month, and in the meantime studies of the reasons were initiated, thereby establishing new procedures to the benefit of the entire program.

In the first place, it was determined by tests conducted on July 21 under Dr. Richard F. Darsie, Jr. of the University of Delaware, and collaborated in by Leslie D. Beadle of the U. S. Public Health Service, that DDT was no longer effective on Delaware mosquitoes, since they had built up an immunity similar to what had been experienced three years prior. Hence, the Air Force, which had been treating a large portion of the breeding area adjacent to Dover, with DDT solution, was not attaining the desired results. Accordingly, the Air Force on August 14th began using the same insecticide as the Mosquito Control Division, benzene hexachloride mixed at .1 pound per two quarts fuel oil per acre, with gratifying results. In addition to this change, permission was obtained for the first time to spray the bulk of Bombay Hook National Wildlife Refuge, the first operation taking place August 10. Similarly the State Game and Fish Commission granted the right to treat any area under its jurisdiction.

Hence, despite a poor start, the Mosquito Control Division by the end of the summer of 1956 was able to bring the mosquito population, as evidenced by trap collections, to a very favorable level, actually less than one-third the volume experienced in the previous year. Besides the measures cited above for the Dover area, several other factors contribute to this success. In the first place, during July the personnel of the Division was gradually increased to a level of 19 by the end of the month. This made possible

an increasingly effective air-spraying program, through the addition of inspection teams and manpower for the mixing and distribution of insecticide, and also permitted the utilization of the fog generator in urban areas. Weather conditions generally were quite unfavorable to mosquito breeding during the summer, since temperatures were below normal. Only July saw any appreciable rainfall, and no abnormally high tides were experienced, such as in previous years had followed hurricanes or severe northeast storms.

The greatest impetus given to the control of the mosquito problem was the passage by the General Assembly and signing by Governor Boggs on July 17th of an emergency appropriation of \$225,000 to be expended during the balance of the calendar year 1956. This enabled the Division to increase greatly the air-spray effort, but later other phases of the program were materially aided.

The contract for air-spraying during the summer of 1956 was performed at a bid price of .1798 per acre. The insecticide used throughout this period was benzene hexachloride mixed at the proportion of .1 pound to two quarts fuel oil applied per acre. The total number of acres sprayed was 260,982, an increase over the previous summer of more than 50 per cent. The comparative breakdown by counties for the two years is as follows:

County	1955 Acreage	1956 Acreage	Per Cent Increase
Sussex	86,183	119,548	38.7
Kent	41,177	88,350	114.5
New Castle	40,149	53,084	32.2
	<u>167,509</u>	<u>260,982</u>	<u>55.8</u>

In addition to the overall increase in acreage, several new localities were treated for the first time. Besides Bombay Hook Refuge, these included the Smyrna River marshes, the Leipsic area, a large block of marshland between the Murderkill and Mispillion Rivers, part of the Prime Hook and Fowler Beach marshes, and most of the land adjacent to Cedar Creek. Despite these new applications, efforts were made to respect the objections of land-owners and in only one instance, where a large breeding area was discovered near Leipsic, was it found necessary to invoke the statutory power of the State Highway Department by air-spraying against an owner's wishes.

Thanks to the emergency \$225,000 appropriation, there was remaining at the end of the summer a considerable

balance of funds that could be diverted to other purposes. Through October 15, when air-spraying for the season was completed, a total of \$83,718.89 had been expended from this account, in the following categories:

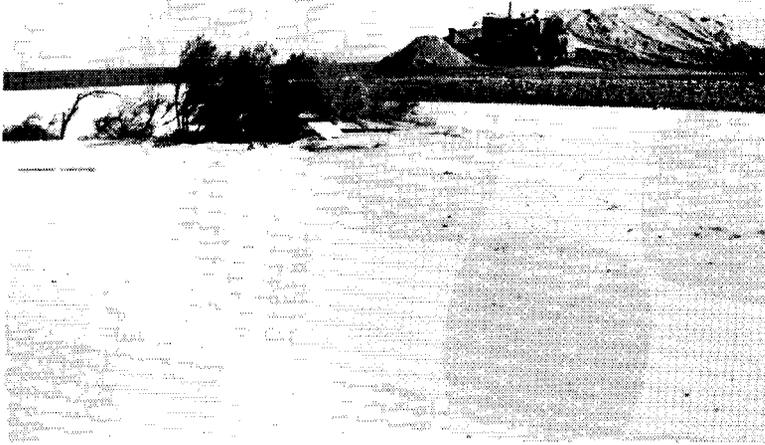
Contract Services for Air-Spraying	\$34,664.32
Spray Oil	12,533.62
Insecticide	23,863.63
Salaries and Wages	4,786.91
Repairs and Replacements	1,584.20
Research	180.00
Miscellaneous Expenses	1,431.43
Office Expense	246.97
New Equipment	4,427.81

The last item represents the purchase of four storage tanks for insecticide which were installed at airports at Dover and Delaware City at a cost of \$1,057.81, a vehicle for personnel for \$1,925, and a steam heater for the mixing plant at a cost of \$1,445.

Because of the poor state of repair of the ditch system so vital to permanent mosquito control measures, attention was given to the use of the outstanding balance of this emergency fund to that purpose. The most urgent need in this field was modern, more efficient equipment. Accordingly, specifications were drawn and proposals opened on December 26, 1956 for five crawler-type tractors, one mounted with a 14" bucket backhoe and all five equipped with improved scapel plows. The bids were awarded for two Caterpillar Model D-2 tractors, two Terratrak Model 500-D tractors, and one Cletrac Model OC-3 tractor. The total cost of these purchases amounted to \$41,660, including the trade-in allowance on five old units. This meant that a total of \$125,378.89 had been used from the emergency fund and the remaining balance of \$99,621.11 reverted to the General Fund on January 1, 1957.

When the machines were put into operation during February of 1957 it was soon discovered that their added efficiency would require a greater force of laborers than that currently being employed by the Division. Since it has always been necessary to complete both ditch cleaning and ditch construction operations by hand labor using spades, potato forks, and hay knives, the full effectiveness in this marsh work of the new tractors demanded an expansion of the manpower not only to operate them, but also for the follow-up jobs.

The wages and salaries account permitted the hiring of two new operators, but to supply the large labor force for



**Other Department Activities: (Above) Maintenance of State Lands.
(Below) Construction of dams.**

manual ditch work it was necessary to find another source of funds. Fortunately, due to the availability of the \$225,000 emergency appropriation during the preceding summer, most of the normal charges against the operations account were not charged to the regular budget. Hence, it was possible to engage this labor force by contract, under the so-called "Virginia Plan," by which a contractor furnished the required manpower at a bid price to the Department based on cost per man-hour, which figure included not only the labor charge but also all hand tools, transportation to job-site, applicable insurance, unemployment compensation, and social security benefit costs. Two such contracts were awarded, one during the fiscal year under consideration, and the other shortly thereafter, on July 18, 1957. The first, on which four bids were received, was awarded at a cost \$2.69 per man-hour to the Jamison Paving Company, and work was begun on April 29. The second, which became effective July 19, was entered into with the same contractor, but at the reduced cost of \$2.10 per man-hour.

With this augmentation of the labor force and the utilization of new machinery, considerable progress was made for the first time in several years toward renovating the ditch system of some eleven and a half million linear feet which was created by the Civilian Conservation Corps during the years 1933 through 1938. The regular crew of the Mosquito Control Division, consisting usually of fifteen men including a foreman, operated exclusively in Sussex County and cleaned a total of 374,822 linear feet of old ditches as well as opening 37,820 feet of new ditches. In conjunction with this effort it was necessary also to do 598,128 square feet of brushing to facilitate the ditching operations. The labor cost per lineal foot of the 410,642 feet of new and old ditching was \$.0469.

In the case of the contract labor, this was principally employed in Kent County, although one crew of the four was stationed in the Slaughter Beach area in Sussex. The reason for this was that the marshes in Kent County had had virtually no maintenance work done on the ditch system since its construction. In addition, quite a large area between Bowers Beach and Kitts Hummock had been laid out for ditching, but the CCC forces were withdrawn before this could be undertaken. In all, the work accomplished by this force up to June 30, 1957 amounted to 352,315 linear feet of new ditching and ditch cleaning. There was also 16,275 square feet of brushing required to permit the clearing operations.

The cost to the department of this effort was \$.135 per lineal feet of ditches. The apparent discrepancy between this figure and the cost in the case of the Mosquito Control Division crew is explained by two factors. In the first place, costs in the one instance include all applicable items, such as transportation, taxes, hand tools, and insurance, whereas with the department forces only the bare labor cost is used in the calculations. Secondly, the ditches on which the contractor's forces were operating were in a much poorer state of repair and hence involved much more extensive efforts to renovate.

The beginning of the summer season of 1957 was marked by an extended drought that had begun in May and was not materially changed until late July. Nonetheless, plans were put into effect for a vigorous air-spray program when necessary. Two inspection teams of summer employees, plus a supervisor, were hired for the two lower counties. For New Castle County the Division was fortunate to engage a post-graduate student from the University of Delaware and an assistant not only to handle inspection, but also to make a survey for a long range control program in that area. Total spraying during the month of June amounted to 48,360 acres, nearly half of which was done in Kent County, where the Air Force cooperated with two operations involving about 12,000 acres each time in May and June.

PUBLIC WORKS

Many of the activities of the Department in construction and maintenance are unrelated to highway activities. In many cases, the State Highway Department provides engineering services to other State agencies faced with construction problems of various types. The principal activities in Public Works, however, relate to drainage problems and shoreline protection. The majority of these projects are authorized by the Legislature, which appropriates necessary funds and designates the State Highway Department as the responsible agency.

The list below indicates Public Works projects which were authorized during this fiscal year, or either under design or construction.

- Contract 1556—Kitts Hummock Dikes
- ” 1565—Slaughter Beach Shore Protection
- ” 1527—Lewes Beach Shore Protection
- ” 1624—Improvement of the Assawoman Canal

- " 1384—Becks Pond Dam
- " 1459—Horseys Pond Dam
- " 1461—Ingrams Pond Dam
- " 1493—Collins Pond Dam
- " 1538—Woodcrest Drainage
- H.B. 381—Entrance and parking area—Sussex County Correctional Institution
- S.B. 48 —Flood Control, New Castle, Study and Construction
- S.B. 200—Little Mill Creek Flood Control Construction
- S.B. 210—Minquadale School Sidewalks
- S.B. 212—Rehoboth Beach Boardwalk
- S.B. 233—Broadkill River Inlet Dredging

The total value of the construction projects listed above is considerably over \$600,000, and thus represents a notable percentage of the State Highway Department activities.

A review of the maintenance report indicates that a sizeable portion of the maintenance operations is directed to activities not directly connected with usual State Highway Department functions. Kent County experiences problems with the maintenance of dump sites, and maintenance personnel are occupied at times with drainage problems resulting from the coastal marshes. New Castle County has maintenance responsibility for Fort Christina State Park, its grounds and buildings. Sussex County is assigned the largest role in public works maintenance, however. Trash collection in unincorporated resort areas is a significant problem. Storm drainage repairs at Broadkill, Lewes and Indian River were a major item during the past year.

State Lands

Each year the number of vacationers and Delawareans visiting the recreation areas between Dewey Beach and Fenwick Island increases. The Sussex County Division is responsible for maintaining the attractiveness and necessary services of these areas. Repairs undertaken in the past year are reported in the maintenance section of this report.

A new concessionaire was approved by the Department for the Indian River Inlet restaurant and bait stand, and the previous concessionaire was re-approved for the bait stand one-half mile north of the Inlet. It is hoped that the new State Police Sub-Station near Rehoboth will aid in

maintaining order throughout the tenting areas, but it is recommended that a night watchman system be instituted. It is further recommended that those recommendations of the 1956 report not yet approved be adopted by the Department prior to the next tourist season.

CIVIL DEFENSE

The Civil Defense section was established shortly before the beginning of this Fiscal Year. The functions were primarily to maintain a liaison between the State Highway Department and the State Department of Civil Defense, and to coordinate all Civil Defense activities within the State Highway Department.

Since a major function of the State Highway Department in Civil Defense is Engineering and Rescue Service, the emphasis has been placed on those aspects. To this end, a compilation of construction equipment belonging to the State, towns and local contractors was undertaken. Other activities included designating Civil Defense personnel within other Divisions, training them both locally and at out-of-state schools conducted by the Federal Agency, and encouraging their participation in Civil Defense Alerts. The overall objective of the program has been to establish an organization capable of rendering emergency assistance in case of natural or man-made disaster.

APPENDIX

1956-57 REPORT

Tables I-VIII

TABLE I
NEW CASTLE COUNTY
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
800	Concord Ave. (Wilm.)	.805	3-25-57	Olivere Paving & Cons.	\$498,961.75	\$ ———	3-25-57	1-1-58	———	\$ ———
1163	Maryland Ave.	1.307	9-25-56	Wilson Contracting Co.	928,454.50	———	7-3-56	11-15-57	———	———
1258	New Castle Ave.	1.87	4-6-56	John Jubian Const. Co.	572,459.00	473,986.43	4-30-56	7-15-57	———	———
1329	Gap Road (Rt. 48 to Sanatorium)	1.921	7-13-55	Wilson Contracting Co.	263,459.50	10,555.10	7-26-55	7-3-56	7-3-56	287,947.80
1336	North Star Road (Rd. 296 to Rd. 13)	.568	12-22-56	George & Lynch	48,546.00	13,946.54	1-26-56	6-1-56	9-16-56	44,806.36
1348	Walnut Street (Front to 4th Street)	.186	8-2-56	T. Paul Dabson	23,829.00	———	10-5-56	5-31-57	5-31-57	34,389.94
1368	Concord Pike	2.055	8-23-56	James Julian, Inc.	726,128.50	———	9-5-56	8-15-57	———	———
1377	Phila. Pike	2.399	2-14-56	Olivere Paving & Const.	645,072.50	537,453.96	2-23-56	1-1-57	———	———
1385	Veale Road	.971	9-19-55	George & Lynch	168,820.50	57,133.85	11-7-55	7-1-56	5-21-57	———
1398	Bellevue Road	.54	3-14-56	T. Paul Dabson	78,491.00	41,808.47	3-22-56	10-15-56	7-2-57	———
1406	Bituminous Surface Treatment	.168	7-18-55	Waco Contracting Co.	124,192.25	42,648.35	7-27-55	6-30-56	7-16-56	102,198.57
1424	Patching Concrete Pavement	———	———	E. Earl Downing, Inc.	———	———	———	———	———	———
1437	Dirt Roads	2.629	2-14-56	Cities Service Bit. Co.	45,961.30	———	2-21-56	9-1-56	5-14-57	71,147.15
	312 (Appleton Rd. to Rd. 41 North for 0.5 miles)									
	463 (Rd. 36 to Rd. 462)									
1470	Hot Mix Requirements	———	2-3-56	George & Lynch	133,752.12	———	5-8-56	7-1-56	10-24-56	180,081.71
1474	Bituminous Surface Treatment	1.52	7-16-56	Carroll O. Stansbury	136,202.49	———	8-2-56	6-30-56	———	———

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TABLE I
NEW CASTLE COUNTY (Cont'd)
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1491	Planning and Leveling Pavement	—	9-10-56	Standard Bit. Co.	\$ 29,808.00	\$ —	10-1-56	11-1-56	11-1-56	\$ 32,080.80
1497	Kirkwood Highway	4.989	6-19-57	Henry C. Eastburn	1,244,359.00	—	6-24-57	5-30-58	—	—
1498	Main St., Newark	1.016	4-12-57	John Julian Const. Co.	577,608.46	—	5-2-57	5-1-58	—	—
1500	4th St. (Market to Spruce St.)	.445	10-10-56	T. Paul Dabson	43,255.00	—	10-29-56	2-15-57	—	—
1501	U.S. 13 (McDonough to St. Georges)	3.711	9-18-56	Standard Bit. Co.	169,315.30	—	10-12-56	6-7-57	6-7-57	—
1505	U.S. 13 (Wrangle Hill)	—	7-16-56	James J. Skelly, Inc.	102,530.40	—	8-20-56	1-1-57	5-27-57	—
1506	Bridge Repairs and Replacements	—	6-22-56	Edgell Const. Co.	15,990.00	—	7-25-56	9-15-56	10-1-56	16,739.44
1506A	Bridge Repairs and Replacements	—	10-3-56	E. Earl Downing	9,470.00	—	12-2-56	1-4-57	2-4-57	9,926.24
1506B	Bridge Repairs and Replacements	—	11-29-56	James J. Skelly, Inc.	19,690.00	—	12-10-56	2-22-57	2-25-57	20,832.09
1528	Patching	—	8-2-56	Interstate Amiesite Corp.	211,877.80	—	8-22-56	11-1-56	—	—
1538	Woodcrest Drainage	.732	11-8-56	Oliver Paving & Const.	115,346.36	—	12-17-56	6-15-57	6-15-57	—
1549	Morrison Ave. (Wilmington Manor)	—	11-9-56	Greggo & Ferrara	13,085.00	—	3-18-57	5-10-57	5-10-57	17,414.63
1561	Northwood Drainage	—	6-17-57	Cities Service Bit. Co.	21,985.00	—	—	10-1-57	—	—
1603	U.S. 13—State Rd. to Basin Corner	2.184	5-27-57	George & Lynch	49,785.00	—	5-24-57	7-30-57	6-24-57	—
1613	Bituminous Surface Treatment	233.5	6-25-57	Carroll O. Stansbury	241,859.19	—	—	6-30-58	—	—
1619	Experimental Bit. Surface Treatment	—	6-25-57	Petrillo Bros., Inc.	26,000.00	—	—	11-1-57	—	—

Total Value of Work Carried Over to 1957-58 — \$2,892,256.76
 Total Amount Paid on Estimate to July 1, 1957 — \$4,008,815.21

TABLE I

KENT COUNTY

CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
916	U.S. 13 Farmington to Harrington	4.716	1-5-56	Henry C. Eastburn & Sons	\$669,673.80	\$498,318.69	1-16-56	4-1-57	-----	\$ -----
1146	Commerce Street (Smyrna)	1.108	6-19-56	George & Lynch	348,903.75	-----	7-5-55	6-7-57	6-7-57	-----
1169	Court St. Bridge	.379	6-8-56	James Julian	798,952.54	-----	6-25-56	10-1-57	-----	-----
1405	Intersection—Alterations and Drainage	-----	10-17-55	Standard Bit. Co.	156,439.50	13,338.44	10-31-55	7-1-56	9-4-56	169,777.94
1407	Bituminous Surface Treatment	.78	7-18-55	Oscar M. Grayson & Son	68,178.00	9,869.03	-----	6-30-56	-----	68,018.83
1425	Patching Concrete Pavement	-----	9-19-55	Pleasanton & Edgell	29,940.50	88.02	11-2-55	6-15-56	9-19-55	38,934.27
1436	Dirt Roads	9.96	2-15-56	Edgell Const. Co.	149,776.70	101,804.60	3-21-56	10-15-56	6-10-57	-----
	Rd. 193 (Rd. 3 to Rd. 195)									
	Rd. 241 (Rd. 240 to Rd. 57)									
	Rd. 170 (Rd. 41 to Rd. 49)									
	Rd. 129 (Rd. 39 to Rd. 40)									
1439	Dirt Roads	5.56	2-3-56	Edgell Const. Co.	103,879.33	9,016.50	2-20-56	10-15-56	9-20-56	119,806.49
	243 (Rd. 241 to Rd. 57)									
	245 (Rd. 243 to Rd. 57)									
	281 (Rd. 58 to Rd. 57)									
	398 (Rd. 397 to Rd. 384)									
	372 (Rd. 7 to Rd. 18)									
	349 (Pickering's Beach Rd.)									
1441	Dirt Roads	5.294	6-22-56	Edgell Const. Co.	79,340.80	-----	7-23-56	6-7-57	7-8-57	-----
	137 (Rd. 41 to Rd. 39)									
	134 (Rd. 65 to Clayton Ice Plant)									
	168 (Rd. 45 to Rd. 167)									
	168 (Rd. 167 to Rd. 166)									
	166 (Rd. 168 to Rd. 165)									
	165 (Rd. 166 to Rd. 101)									
	162 (Rd. 158 to Rd. 161)									
	162 (Rd. 161 to Rd. 51)									
	198 (Rd. 51 to Rd. 162)									

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TABLE I
KENT COUNTY (Cont'd)
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1444	South Little Creek Rd.	1.334	3-22-57	R. & G. Const. Co.	\$146,203.76	\$ ———	4-2-57	11-1-57	———	\$ ———
1456	State House (Sidewalks & Curbs)	———	1-5-56	Edge!! Const. Co.	37,994.30	1,596.46	2-21-56	6-1-56	———	19,374.05
1463	Motor Vehicle Lane	———	6-8-56	DiSabatino & Raniere	7,400.00	648.80	———	———	3-19-57	7,848.80
1464	State Police Bldg.	———	8-30-56	Albert Kruse-Clutz Bros.	459,900.00	———	9-20-56	7-15-57	———	———
1465	Legislative Streets (Dover)	0.732	9-4-56	James Julian, Inc.	274,749.00	———	9-20-56	7-15-57	———	———
1475	Bituminous Surface Treatment	80.48	7-16-56	Delmarva Asphalt Co.	75,465.94	———	8-2-56	6-30-57	———	97,209.70
1479	Dirt Roads	5.14	9-4-56	Edgell Const. Co.	81,769.20	———	9-19-56	7-31-57	———	———
	347 (Rd. 7 to Rd. 348)									
	202 (Rd. 52 to Rd. 203)									
	125 (Rd. 54 to Rd. 52)									
1480	Dirt Roads (Grading)	18.28	5-27-57	Burger Const. Co.	122,274.70	———	6-3-57	9-15-57	———	———
1480A	Dirt Roads (Paving)	———	6-4-57	Alexander Const. Co.	176,130.00	———	———	11-1-57	———	———
	320 (Rd. 6 to N.C. Co. Line)									
	321 (Rd. 320 to Dead End)									
	320A (Rd. 320 to Dead End)									
	325 (Rd. 6 to Rd. 9)									
	83 (Rd. 525 to Rd. 9)									
	330A (U.S. 13 to Rd. 330)									
	330 (U.S. 13 to Rd. 42)									
	333 (Rd. 9 to Rd. 86)									
	336 (Rd. 86 to Rd. 9)									
	342 (Rd. 62 to Rd. 8)									
1481	Dirt Roads	9.12	9-10-56	Walter Roach Co.	54,754.80	———	9-20-56	6-15-57	6-6-57	———
	287 (Rd. 284 to U.S. 13)									
	286 (Rd. 284 to U.S. 13)									
	409 (Rd. 14 to Rd. 124)									
1496	Wendalls Corner to Woodland Beach Causeway	3.745	7-16-56	Cities Service Bit. Co.	39,899.50	———	8-7-56	5-15-57	11-21-56	37,358.40
1519	Kenton to Blackiston	3.448	2-12-57	E. Stewart Mitchell, Inc.	51,603.40	———	3-20-57	8-1-57	7-8-57	———

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TABLE I

KENT COUNTY (Cont'd)

CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1520	Woodside to Rising Sun	3.661	2-12-57	E. Stewart Mitchell, Inc.	\$ 59,115.25	\$ ———	3-18-57	8-1-57	6-12-57	\$ ———
1525	Hot Mix Requirements	—	8-2-56	Standard Bit. Co.	55,584.85	—	—	6-14-57	—	73,002.00
1534	Dirt Roads	5.51	10-16-56	Edgell Const. Co.	46,743.00	—	11-1-56	9-1-57	—	—
	84 (Rt. 13 to Rd. 11)									
1535	Dirt Roads	5.08	10-16-56	E. Stewart Mitchell, Inc.	51,433.00	—	4-29-57	9-1-57	—	—
	341 (Rd. 1 to Rd. 66)									
	355 (Rt. 13A to Rd. 10)									
	361 (Rt. 13A to Rd. 360)									
1544	Kent Co. Drainage	1.235	11-29-56	Burger Const. Co.	55,565.34	—	12-7-56	6-28-57	6-28-57	—
1598	Dirt Roads (Grading)	18.78	6-4-57	Alexander Const. Co.	101,379.00	—	6-19-57	10-1-57	—	—
1598A	Dirt Roads (Paving)	—	6-4-57	E. Stewart Mitchell, Inc.	173,810.00	—	—	10-15-57	—	—
	367 (Rt. 30 to Rd. 106)									
	366 (Rd. 113A to Rd. 367)									
	380 (Rd. 385 to Rd. 33)									
	385 (U.S. 13 to Rd. 384)									
	372 (U.S. 13 to Rd. 18)									
	228 (Rd. 52 to Rt. 10)									
	246 (Rt. 10 to Rt. 12)									
	386 (Rd. 384 to Rd. 33)									
	282 (Rd. 284 to Rd. 281)									
1609	Dirt Roads (Grading)	2.30	6-25-57	Alexander Const. Co.	35,614.00	—	—	9-15-57	—	—
1609A	Dirt Roads (Paving)	—	6-25-57	Edgell Const. Co.	26,210.00	—	—	10-1-57	—	—
	415 (Rd. 124 to Shoreline)									
1612	Surface Treatment	105.00	6-25-57	Edgell Const. Co.	154,667.36	—	—	6-30-58	—	—
1618	Bank Run Mix	—	6-25-57	Bit. Const. Co.	31,750.00	—	—	11-1-57	—	—

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Total Value of Work Carried Over to 1957-58 — \$1,425,154.67
 Total Amount Paid on Estimate to July 1, 1957 — \$2,894,126.60

TABLE I
SUSSEX COUNTY
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
925	U.S. 13—Farmington to Greenwood	5.573	10-17-55	Henry C. Eastburn & Sons	\$770,011.60	\$453,674.53	10-25-55	3-15-57	—	\$ —
1044	Laurel to Sharptown	7.930	3-21-56	James Julian, Inc.	249,223.65	98,984.60	3-26-56	6-3-57	6-3-57	—
1151	Rt. 14—Five Points to C.R. 38	9.054	4-15-57	George & Lynch	568,157.14	—	4-29-57	—	—	—
1319	High Street (Seaford)	.984	1-25-55	George & Lynch	240,515.60	6,629.41	3-23-55	1-5-56	3-16-56	256,851.45
1381	Reflooring Rehoboth Bridge	—	9-28-55	High Welding Co.	23,800.00	4,420.00	12-13-55	1-28-56	12-21-56	24,320.00
1391	Clarksville to Millers Neck	4.744	9-19-55	Melvin L. Joseph Const. Co.	81,275.60	5,352.57	10-10-55	6-15-56	6-20-56	86,628.17
1393	Rd. 582 (Rd. 404 to Rd. 583) Rd. 583—Rd. 34 to U.S. 13	3.068	9-19-55	George & Lynch	60,362.40	2,383.65	9-30-55	6-15-56	7-30-56	60,109.73
1395	County Rds. 582 & 583 Rd. 277 (Rd. 275—Rd. 24 via Conley's Chapel)	—	9-19-55	Melvin L. Joseph Const. Co.	78,562.80	3,350.95	11-8-55	10-15-56	11-20-56	90,611.52
1396	Rd. 571 (Rt. 404 to Maryland Line)	1.963	7-8-55	Melvin L. Joseph Const. Co.	35,606.17	3,969.24	7-28-55	11-1-55	6-28-56	38,068.86
1397	Rd. 389 (Johnson to Rd. 58) Rd. 390 (Bunting to Rd. 389)	2.043	8-23-55	Scott & Wimbrow	38,955.25	8,580.21	9-6-55	11-1-55	6-8-56	45,559.04
1421	Five Points to Lewes (Sussex County)	2.640	1-3-56	George & Lynch	252,091.20	9,892.40	1-16-56	10-15-56	7-30-56	262,605.52
1422	Stein Highway	2.287	10-9-56	James Julian, Inc.	645,695.28	—	11-21-56	11-1-57	—	—
1429	Greenwood to Ellendale	9.926	11-26-56	George & Lynch	629,599.50	—	12-17-56	8-1-57	—	—

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TABLE I
SUSSEX COUNTY (Cont'd)
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

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Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1438	Dirt Roads Rd. 589A (Rt. 13 to Rd. 589) Rd. 536 (Railroad to Rd. 542) Rd. 536 (Rd. 542 to Rd. 78) Rd. 536A (Woodland Ferry) Rd. 465 (Rd. 466 to Rd. 479) Rd. 465A (Rd. 465 to Rd. 24) Rd. 505 (Rd. 24 to Rd. 76) Rd. 507 (Md. Line to Rd. 76) Rd. 507 (Rd. 76 to Rd. 76) Rd. 507 (Rd. 76 to Md. Line) Rd. 462 (Rd. 70 to Rt. 13)	14.512	3-14-56	James Julian, Inc.	\$238,291.30	\$230,535.90	7-13-56	11-15-56	—	\$ —
1440	Dirt Roads Rd. 224 (Rd. 42 to Rd. 629)	4.350	5-28-56	Burger Const. Corp.	83,919.50	—	6-13-56	11-1-56	—	—
1440A	Dirt Roads Rd. 211 (Rd. 207 to Rd. 205) (Rd. 206 to Rd. 225) Rd. 206 (Rd. 211 to Rd. 207) Rd. 225 & Rd. 224 (Rd. 224 North) (Rd. 225 to Rd. 213)	5.603	5-28-56	Walter Roach & Sons	71,071.00	—	6-12-56	11-15-56	—	—
1442	Dirt Roads Rd. 334 (Rd. 113 to Rd. 339) Rd. 326 (Rd. 328 to Rd. 20A Line) Rd. 326 & 318 (Rd. 318 to Rd. 328) (South Rd. 326B Line) Rd. 82 (Rd. 326 to Rt. 113) Rd. 328 (Rd. 20 to Rt. 113) Rd. 318 (Rd. 48 South) Rd. 317 (Rd. 48 to Rd. 318)	4.256	5-28-56	James Julian, Inc.	97,847.75	12,572.28	6-25-56	10-15-56	12-12-56	112,726.46
1443	Dirt Roads Rd. 276 (Rd. 269 to 275) Rd. 279 (Rd. 24 to Rd. 277) (Rd. 24 to Rd. 279)	3.949	5-28-56	George & Lynch	76,260.50	—	6-20-56	11-1-56	12-6-56	—

TABLE I
SUSSEX COUNTY (Cont'd)

CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work		Estimated		Final Estimate
						Incomplete July 1-56	Starting Date	Completion Date	Date Accepted	
1446	Md. Line to Shaft Ox Corner	5.651	8-7-56	George & Lynch	\$425,718.00	\$ — — —	8-13-56	5-15-57	6-19-57	\$ — — —
1458	Rehoboth to Five Points (Drainage)	—	2-3-56	Edgell Const. Co.	54,976.65	24,706.55	3-17-56	8-1-56	1-2-57	53,963.25
1459	Horseys Pond Dam	—	6-8-56	James Julian, Inc.	34,772.40	—	9-11-56	11-15-56	—	—
1461	Ingrams Spill Dam	—	7-16-56	Burger Const. Co.	39,743.45	—	7-31-56	12-15-56	4-25-57	40,750.12
1462	Motor Vehicle Test Lane	—	6-8-56	John L. Briggs	21,850.00	21,850.00	7-31-56	9-30-56	3-7-56	22,545.00
1476	Bituminous Surface Treatment	196.33	7-16-56	Delmarva Asphalt Co.	224,986.79	—	8-13-56	—	—	—
1483	Dirt Roads	5.36	9-17-56	Montgomery Const. Co., Inc.	51,771.90	—	10-17-56	7-30-57	7-12-57	—
	283A (Rd. 275 to Rd. 277)									
	283 (Rt. 14 to Rd. 275)									
	283B (Rd. 283A to Dead End)									
	284 (Rd. 283A to Rd. 24)									
1484	Dirt Roads—Grading	4.72	5-14-57	Earth Movers, Inc.	43,186.00	—	5-28-57	9-30-57	—	—
1484A	Dirt Roads—Paving	4.72	5-14-57	Edgell Const. Co.	83,346.80	—	—	11-1-57	—	—
	591 (Rd. 600 to Rd. 401)									
	565 (Rd. 591 to Rd. 401)									
	592 (Rd. 565 to Rd. 421)									
	572 (Rd. 30A to Md. Line)									
1487	Dirt Road—Grading	8.89	6-18-57	Atkins Bros.	57,811.00	—	7-1-57	9-15-57	—	—
1487A	Dirt Road—Paving	8.89	6-17-57	Delmarva Asphalt Co.	91,766.50	—	—	10-15-57	—	—
	338 (U.S. 13 to Rd. 409)									
	409 (Rd. 410 to Rd. 408)									
	421 (Rd. 410 to Rd. 431)									
	433 Rd. 412 to Rd. 201									
	336A (Rd. 332 to Rd. 336)									
	355 (Rd. 382 to Rd. 356)									

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TABLE I
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR
SUSSEX COUNTY (Cont'd)

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1488	Dirt Roads 245 (Rd. 319 to Rd. 246) 246 (Rd. 245 to Georgetown Limits) 319 (Rd. 18 to Rd. 46B) 519 (U.S. 113A to U.S. 113) 469 (Rd. 28 to Rd. 62) 518 (Rd. 28 to Rd. 469) 565 (U.S. 113 to Rd. 524B)	6.94	10-12-56	Montgomery Const. Co., Inc.	\$98,966.50	\$ — — — —	12-20-56	8-30-57	— — — —	\$ — — — —
1489	Ellendale to Milton	7.017	2-12-57	Standard Bit. Co.	495,258.50	— — — —	3-4-57	— — — —	— — — —	— — — —
1490	Shaft Ox Corner to Millsbodo	5.909	7-3-56	George & Lynch	419,688.75	— — — —	7-17-56	6-1-57	7-19-57	— — — —
1494	Stein Highway (Reliance to Rd. 553)	2.955	6-26-57	James Julian, Inc.	233,795.80	— — — —	— — — —	11-15-57	— — — —	— — — —
1522	Dirt Roads 406 (Dagsboro to Rd. 405) 405 (U.S. 113 to Rd. 333A)	— — —	9-10-56	Melvin Joseph	97,811.00	— — — —	10-16-56	— — — —	— — — —	— — — —
1526	Hot Mix Requirements	— — —	8-2-56	Standard Bit. Co.	55,935.61	— — — —	8-17-56	11-1-56	10-4-56	58,271.25
1530	Dirt Roads 366 (Rd. 84 to Rd. 353) 353 (Rd. 366 to Rd. 52)	1.728	4-17-56	Melvin Joseph	29,692.41	— — — —	8-29-56	6-30-57	7-12-57	— — — —
1536	Dirt Roads 585 (Rd. 583 to Rd. 32) 575 (Rd. 404 to Rd. 573) 573 (Rd. 575 to Rd. 575A) 575A (573 to Rd. 574) 574 (575A to Rd. 30A)	5.07	9-6-56	Walter Roach & Sons	69,468.00	— — — —	12-5-56	6-15-57	— — — —	— — — —
1537	Dirt Roads 333 (U.S. 54 to Rd. 331) 354 (Rd. 54 to Rd. 382) 369 (Rd. 370 to Rd. 54) 353 (Rd. 366 to Rd. 352) 352 (Rd. 26 to Rd. 84)	5.59	9-6-56	James Julian, Inc.	85,353.00	— — — —	11-12-56	— — — —	— — — —	— — — —

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TABLE I
SUSSEX COUNTY (Cont'd)
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1542	Dirt Roads 257 (Rt. 5 to Rd. 88) 258 (Rd. 88 to Rt. 18) 290 (.5 Mile N. of Rd. 292 to Rd. 292) 292 (Rd. 290 to Rt. 5) 262 (Rd. 18 to Rd. 290)	6.08	9-17-56	Montgomery Const. Co., Inc.	\$69,108.50	\$ ———	8-15-57	————	————	\$ ———
1543	Dirt Roads 302 (Rt. 5 to Rd. 301) 301 (Rd. 302 to Rt. 24) 298 (Rt. 24 to Rt. 22) 298A (Rd. 298 to Dead End)	4.94	9-17-56	Montgomery Const. Co., Inc.	65,098.10	————	12-4-56	————	7-12-57	———
1545	Dirt Roads 263 (Rd. 18 to Dead End) 274 (.15 Mile S. of Rd. 275 to Dead End) 273 (Rd. 14 to Dead End) 273A (Rd. 14 to Dead End) Dodd Ave. (Rd. 14 to Dead End) Wash. Hghts. (Rd. 14D to 14A)	4.53	11-9-56	Walter Roach & Sons	66,639.00	————	2-25-57	————	————	———
1546	Dirt Roads 413 (Rd. 60 to Rd. 419) 419 (Rd. 413 to Md. Line) 415B (Rd. 413 to Rd. 26)	2.60	11-9-56	Montgomery Const. Co., Inc.	45,106.00	————	1-24-57	————	————	———
1547	Dirt Roads 446 (Rd. 20 to Rd. 74) 488 (U.S. 13 to U.S. 13A) 525 Extended (Rd. 20B to Rd. 20)	5.45	11-9-56	Edgell Const. Co.	80,000.00	————	12-5-56	8-15-57	————	———

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TABLE I
SUSSEX COUNTY (Cont'd)
CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

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Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1548	Dirt Roads 451 (Rd. 70 to Rd. 66) 451A (Rd. 451 to Rd. 64) 458 (Rd. 451 to Rd. 72) 464 (Rd. 458 to Rd. 451)	5.53	11-9-56	Edgell Const. Co.	\$ 80,000.00	\$ -----	11-9-56	9-15-57	8-2-57	\$ -----
1550	Dirt Roads (Grading)	9.92	5-1-57	James Julian, Inc.	92,266.00	-----	5-22-57	10-1-57	7-29-57	-----
1550A	Dirt Roads (Paving) 471 (Rd. 431 to Rd. 432) 375 (Rd. 382 to Rd. 376) 471 (Rd. 60 to Rd. 413) 419 (Rd. 413 to Rd. 420) 420 (Rd. 419 to Rd. 60)	9.92	5-4-57	Montgomery Const. Co., Inc.	98,253.50	-----	-----	10-15-57	-----	-----
1554	Dirt Roads 527 (Rd. 18 to Rd. 526) 526 (Rd. 527 to Rd. 46)	3.81	11-29-56	Burger Const. Co.	72,291.50	-----	12-5-56	-----	-----	-----
1555	Dirt Roads 505 (Rd. 76 to Rd. 509)	2.45	11-29-56	George & Lynch	36,755.00	-----	-----	-----	-----	-----
1559	Misc. Construction	---	2-12-57	Melvin Joseph	24,465.00	-----	2-28-57	4-26-57	-----	-----
1560	Dirt Roads 589 (Rd. 600 to Rd. 600)	2.34	2-12-57	Burger Const. Co.	36,507.00	-----	3-19-57	-----	-----	-----
1575	Dirt Roads (Grading)	18.02	5-7-57	Standard Bit. Co.	117,170.00	-----	5-14-57	-----	-----	-----
1575A	Dirt Roads (Paving) 201 (Rd. 36 to Rd. 202) 202 (Rd. 201 to Rd. 36) 205 (Rd. 206 to Rd. 206) 207A (Rd. 206 to Rt. 14) 216 (Rd. 224 to Rd. 212) 38E (Rd. 38 to Bay) 227 (Rd. 230 to Rt. 16)	---	5-4-57	Montgomery Const. Co., Inc.	174,494.50	-----	-----	10-15-57	-----	-----
1606	Dirt Roads (Grading)	21.41	7-1-57	Edgell Const. Co.	129,277.00	-----	-----	5-15-58	-----	-----

TABLE I

SUSSEX COUNTY (Cont'd)

CONTRACTS ACTIVE DURING 1956-57 FISCAL YEAR

601

Contract No.	Description	Miles	Award Date	Contractor	Contract Value	Value of Work Incomplete July 1-56	Starting Date	Estimated Completion Date	Date Accepted	Final Estimate
1606A	Dirt Roads (Paving) 532 (U.S. 13 to U.S. 13) 531 (Rd. 532 to Rd. 46) 533 (Rd. 531 to Rt. 18) 560 (Rt. 18 to Rt. 46) 485A (Rd. 527 to Rt. 46) 557 (Rt. 30 to Rd. 554) 557A (Rd. 554 to 553) 538 (Rt. 78 to Md. Line) 483A (Rt. 20 to Rd. 483) 483 (Rd. 483A to Rd. 20) 534 (Rt. 535 to Rd. 546)	21.41	7-1-57	Edgell Const. Co.	\$249,609.00	\$ ———	———	5-15-57	———	\$ ———
1607	Dirt Roads (Grading)	17.16	6-25-57	Melvin Joseph	123,563.50	———	6-25-57	10-1-57	———	———
1607A	Dirt Roads (Paving) 363 (Rd. 84 to Rd. 361) 362 (Rd. 361 to Rd. 363) 364 (Rd. 363 to Camp Barnes) 381 (Rd. 58 to Rd. 384) 364A (Rd. 381 to Rd. 364) 343 (Rd. 54 to Rd. 341) 367 (Rd. 365 to Rd. 84) 368 (Rd. 365 to Rd. 362) 368A (Rd. 362 to Rd. 361)	17.16	6-25-57	Montgomery Const. Co., Inc.	182,391.00	———	———	10-15-57	———	———
1611	Surface Treatment	215.85	6-25-57	Delmarva Asphalt Co.	224,241.45	———	———	6-30-58	———	———
1617	Bank Run Mix	———	6-25-57	Bituminous Const. Co.	31,750.00	———	———	11-1-57	———	———

Total Value of Work Carried Over to 1957-58 — \$3,707,338.65
Total Amount Paid on Estimate to July 1, 1957 — \$4,273,729.39

TABLE II
EQUIPMENT DIVISION

Equipment Purchased 1956-1957

Contract	Awarded	Description	Cost	Trade-In
NCE-328	7-18-56	Sweeper	\$ 11,323.00	
K-1	7-19-56	Painting	4,042.00	
NCE-329	7-26-56	Sweeper	11,345.00	
NCE-330	7-26-56	Snow Fence	4,650.00	
KE-47	7-26-56	Snow Fence	4,650.00	
NCE-331	7-26-56	Snow Fence	3,180.00	
KE-46	7-26-56	Snow Fence	2,187.00	
SE-25	8-1-56	Snow Fence	1,428.96	
SE-24	8-1-56	3-Gradalls	80,380.00	
SE-26	8-1-56	2-Sweepers	21,975.00	
KE-48	8-1-56	5-Cars	4,906.80	Trade-Ins
NCE-332	8-1-56	1-Car	475.46	Trade-In
KE-49	8-1-56	1-Sta. Wagon	1,752.93	
KE-50	8-1-56	1-Pick-up	669.32	Trade-In
KE-51	8-6-56	9-Cars	19,692.00	
KE-52	8-22-56	1-Sta. Wagon	1,791.15	
KE-53	8-22-56	2-Tractors	3,076.60	
KE-54	8-22-56	1-Pick-up	1,023.22	Trade-In
SE-27	9-19-56	Cleaner	1,350.00	Trade-In
SE-28	9-19-56	1-Pick-up	1,446.28	Trade-In
SE-29	9-19-56	5-Pick-ups	6,469.40	
KE-55	10-1-56	1-Sedan Del.	1,550.00	Trade-In
KE-56	10-1-56	1-Special Canopy	2,159.00	Trade-In
KE-57	10-1-56	1-Truck	1,350.00	Trade-In
KE-58	10-16-56	3-Trucks	13,397.80	Trade-In
KE-59	10-16-56	1-Sta. Wagon	1,400.00	Trade-In
SE-30	9-17-56	Grader	9,150.00	Trade-In
SE-31	9-26-56	Grader	18,800.00	Trade-In
SE-32	10-16-56	6-Trucks	30,768.14	Trade-In
NCE-333	10-16-56	16-Snow Plows	9,998.00	
NCE-334	10-16-56	Curb Machine	1,105.00	
NCE-335	10-16-56	6-Spreaders	7,440.00	
NCE-336	10-16-56	1-V Plow	1,280.00	
KE-60	11-13-56	Maintainer	4,370.00	
KE-61	12-27-56	4-Cars	5,784.60	
KE-62	12-27-56	1-Car	2,199.50	
MC-1	12-27-56	2-Tractors	16,900.00	M.C.
MC-2	12-27-56	2-Tractors	20,465.00	M.C.
MC-3	12-27-56	1-Tractor	3,800.00	M.C.
KE-63	1-22-57	1-Tower Truck	8,775.00	
KE-64	2-20-57	1-Line Marker	7,147.00	
KE-65	3-5-57	3-Cars	4,302.09	
KE-66	3-5-57	1-Car	1,850.09	
KE-67	3-20-57	4-Cars	4,560.00	Trade-In
NCE-337	3-27-57	2-Jeeps	3,482.76	

TABLE II (Continued)
EQUIPMENT DIVISION

Equipment Purchased 1956-1957

Contract	Awarded	Description	Cost	Trade-In
MC-4	4-24-57	1-Car	909.10	Trade-In
SE-35	4-24-57	7-Cars	7,063.70	Trade-In
SE-36	4-24-57	1-Pick-up	1,326.56	
SE-37	4-25-57	4-Sta. Wagon	7,189.00	
KE-68	4-24-57	2-Cars	2,676.32	Trade-In
KE-69	4-30-57	2-Cars	2,669.70	
KE-70	4-30-57	1-Pick-up	1,286.87	
NCE-338	4-30-57	1-Sta. Wagon	1,733.32	
KE-71	5-22-57	4-Trucks	14,096.00	Trade-In
KE-72	5-22-57	Cable Control	2,200.00	
KE-73	5-29-57	6-Cars	8,340.00	
KE-74	5-29-57	1-Car	2,134.51	
KE-75	5-29-57	1-Sta. Wagon	1,612.76	
KE-76	6-15-57	2-Cars	2,391.00	Trade-In
KE-77	6-19-57	3-Cars	2,246.00	Trade-In
KE-78	6-19-57	1-Truck	1,799.15	Trade-In
KE-79	6-18-57	1-Pick-up	982.82	Trade-In
KE-80	6-18-57	1-Pick-up	1,300.00	Trade-In
KE-81	6-18-57	1-Grader	15,798.00	
KE-82	6-18-57	1-Grader	7,800.00	Trade-In
KE-83	6-18-57	1-Concrete Saw	1,602.44	
KE-84	6-18-57	1-Sta. Wagon	1,450.00	
SE-38	6-18-57	4-Trucks	26,750.00	Trade-In
NCE-330	6-18-57	8-Pick-ups	7,670.56	Trade-In
NCE-340	6-18-57	1-Pneuma Tractor	11,510.00	
NCE-341	6-18-67	2-Tractor Mowers	4,112.60	
NCE-342	6-18-57	2-Spreaders	1,150.00	
NCE-343	6-18-57	Snow Fence	5,050.00	
MC-5	6-25-57	2-Jeeps	3,736.40	
SE-30	6-25-57	1-Packmater	8,482.15	
		TOTAL	\$526,866.97	

Note:

The preponderance of KE Contracts is due to the fact that all Contracts for all other Divisions except New Castle County and Sussex County are listed as KE Contracts.

TABLE III
MILEAGE OF STREETS AND HIGHWAYS BY
SURFACE TYPE BY COUNTY

JUNE 30, 1957

Surface Type	Kent	New Castle	Sussex	Totals
Belgian Block	—	.40	—	.40
Brick .....	.68	1.85	—	2.53
Concrete	184.70	149.11	225.50	559.31
Bituminous Concrete	71.52	266.25	137.70	475.47
Bituminous Penetration .....	.61	300.90	49.95	351.46
TOTAL PAVED	257.51	718.51	413.15	1389.17
Other Low Type Bituminous	28.85	25.25	105.59	159.69
Bituminous Surface Treated	259.45	187.97	435.69	883.11
Soil Surfaced	426.99	102.39	346.32	875.70
TOTAL SURFACED	715.29	315.61	887.60	1918.50
Graded and Drained Earth	65.41	5.12	541.34	611.87
Unimproved	1.17	6.78	8.95	16.90
Primitive	1.40	.16	—	1.56
TOTAL UNSURFACED	67.98	12.06	550.29	630.33
TOTAL TWO AND FOUR LANE HIGHWAYS	1040.78	1046.18	1851.04	3938.00

DIVIDED HIGHWAYS

Concrete	27.75	23.20	25.58	76.53
Bituminous Concrete	7.96	42.93	7.04	57.93
Low Type Bituminous	—	.11	—	.11
Bituminous Surface Treated	—	.33	.68	1.01
Soil Surfaced	—	—	.12	.12
TOTAL DIVIDED HIGHWAYS	35.71	66.57	33.42	135.70
TOTAL ALL TYPES	1076.49	1112.75	1884.46	4073.70

TABLE III
MILEAGE OF STREETS AND HIGHWAYS BY
SYSTEM CLASSIFICATION BY COUNTY

	Kent	New Castle	Sussex	Totals
Urban (Over 5,000 Population)	10.13	30.63	2.56	43.32
Primary	120.52	146.99	221.99	489.50
Secondary	378.69	341.99	698.08	1418.76
Tertiary	*567.15	*593.14	*961.83	*2122.12
TOTAL	1076.49	1112.75	1884.46	4073.70
*Includes:				
Suburban Development	12.50	232.29	7.47	252.26
Senate Bill #387	8.39	29.60	13.18	51.17

TABLE IV
TRAFFIC AND PLANNING DIVISION
TRAFFIC VOLUMES AT FOUR AUTOMATIC
COUNTER STATIONS BY YEAR, BY MONTH,
WITH RELATED PERCENTAGES

Month	1941	1955	1956	Percentage Change	
	1942	1956	1957	1956-1957	1956-1957
				1941-1942	1955-1956
July	22,721	46,753	47,523	+109.16	+ 1.65
August	22,328	42,832	48,446	+116.97	+11.31
September	19,902	42,630	44,652	+124.36	+ 4.74
October	17,491	39,624	38,790	+121.77	— 2.10
November	17,056	35,821	37,795	+121.59	+ 5.51
December	16,174	33,798	35,735	+120.94	+ 5.73
January	13,421	30,420	31,523	+134.88	+ 3.63
February	13,736	34,073	34,913	+154.17	+ 2.47
March	14,065	34,290	35,714	+153.92	+ 4.15
April	15,583	37,401	38,024	+144.01	+ 1.67
May	14,744	39,491	40,778	+176.57	+ 3.26
June	13,810	44,141	43,757	+216.85	— 0.87
Totals	201,031	461,238	477,650	+137.60	+ 3.56

TABLE V
SUBURBAN DEVELOPMENT DIVISION
MILEAGE OF SUBURBAN STREETS ACCEPTED
1956-1957

Contract	Development	Mileage
S.B. 387	Addicks Estates	0.462
S.B. 387	Allee Development (Kent)	0.338
S.B. 387	Anne Acres (Sussex)	0.519
S.B. 387	Anneville (Kent)	0.150
Developer	Ashbourne Hills	1.251
Developer	Ashley Heights	0.291
S.B. 387	Bay Road (Sussex)	0.155
S.B. 387	Bay Road Addition (Kent)	0.498
S.B. 387	Bellevue	0.229
S.B. 387	Bellewood	0.243
Developer	Bestfield	0.789
S.B. 387	Big Stone Beach (Kent)	0.166
S.B. 387	Blue Rock Manor	0.405
Developer	Blue Rock Manor	0.463
S.B. 387	Boulder Brook	0.340
S.B. 387	Boxwood	0.170
S.B. 387	Brack-Ex	0.042
Developer	Briar Park (Kent)	0.346
Developer	Briarwood	0.247
S.B. 387	Brookland Terrace	0.111
Developer	Brookside Park	0.385
S.B. 387	Buckingham Heights	0.346
Developer	Capitol Trail Farms	0.380
S.B. 387	Carrcroft	0.094
S.B. 387	Carrcroft Crest	0.450
Developer	Carrcroft Crest	0.176
Developer	Castle Hills	2.262
Developer	Chestnut Hill Estates	1.101
S.B. 387	Chestnut Knoll Acres (Sussex)	0.437
S.B. 387	Christine Manor	1.171
S.B. 387	Claymont Heights	0.106
S.B. 387	Clearview Manor	0.148
Developer	Cleland Heights	1.469
S.B. 387	Collins Park	3.610
S.B. 387	Collins & Russell Development (Sussex)	0.575
S.B. 387	Colwyck	0.174
SD-76	Concord Manor	0.281
S.B. 387	Cooper's Estates (Kent)	0.241
S.B. 387	Crestfield	0.390
S.B. 387	Delaire	0.659
S.B. 387	Delaplane Manor	0.113
S.B. 387	Delaware Heights	0.113
S.B. 387	Dodd's Addition (Sussex)	0.956
S.B. 387	Dover (Kent)	0.247
S.B. 387	Dover Heights (Kent)	0.793
S.B. 387	Dunovan Development (Sussex)	0.348
S.B. 387	DuPont Manor (Kent)	0.744

TABLE V (Continued)
 SUBURBAN DEVELOPMENT DIVISION
 MILEAGE OF SUBURBAN STREETS ACCEPTED
 1956-1957

Contract	Development	Mileage
S.B. 387	DuRoss Heights	0.246
S.B. 387	Eastburn Heights	0.256
S.B. 387	East Lake Gardens (Kent)	0.619
S.B. 387	Eastover Hills (Kent)	0.729
S.B. 387	Eden Park Gardens	0.075
S.B. 387	Edgemoor Terrace	0.024
S.B. 387	Edgewood Hills	1.057
S.B. 387	Elliott's Property	0.015
S.B. 387	Elmhurst	0.136
SD-73	Elmhurst	0.210
Developer	Fairfax	7.217
S.B. 387	Faulkland Woods	0.116
S.B. 387	Felton Heights (Kent)	0.305
S.B. 387	Fern Hook	0.176
S.B. 387	Forest Brook Glen	0.078
S.B. 387	Forest Hill Park	0.255
Developer	Forest Hill Park	0.110
S.B. 387	Forwood	0.378
S.B. 387	Frederick's Property	0.089
S.B. 387	Glen Berne Estates	1.800
Developer	Glen Berne Estates Addition	0.275
Developer	Glendale	1.259
S.B. 387	Glenside Farms	0.047
Developer	Glenville	1.303
S.B. 387	Gordon Heights	0.043
Developer	Graylyn Crest #1	1.062
Developer	Graylyn Crest #2	1.114
Developer	Green Acres	1.111
S.B. 387	Green Briar	0.237
S.B. 387	Greenlea Acres (Sussex)	0.320
S.B. 387	Gumwood	0.215
S.B. 387	Gwinhurst	0.121
S.B. 387	Harlemtown (Sussex)	0.157
S.B. 387	Highland Woods	0.766
S.B. 387	Hildale (Kent)	0.133
Developer	Hilton	0.180
S.B. 387	Hilltop Manor	0.116
Developer	Holly Oak Terrace	0.071
S.B. 387	Huntley Circle (Kent)	0.656
Developer	Hyde Park	0.944
S.B. 387	Indian Field	1.088
S.B. 387	Kiamensi	0.336
Developer	Kirkwood Gardens	1.315
Developer	Klair Estates	1.058
S.B. 387	Lake Pines (Sussex)	1.172
S.B. 387	Lake Shores (Sussex)	1.319

TABLE V (Continued)

SUBURBAN DEVELOPMENT DIVISION
MILEAGE OF SUBURBAN STREETS ACCEPTED
1956-1957

Contract	Development	Mileage
S.B. 387	Lakeview (Kent)	0.122
S.B. 387	Lancaster Court	0.586
S.B. 387	Lancaster Village	0.611
Developer	Landers Park	0.221
S.B. 387	Latimer Estates	0.194
S.B. 387	Laurel (Sussex)	0.457
S.B. 387	Liftwood	0.367
Developer	Liftwood	0.406
Developer	Limestone Gardens	0.615
S.B. 387	Lindmere	0.141
Developer	Llangollen Estates	0.738
S.B. 387	Lyndalia	0.052
S.B. 387	Lynford	0.060
S.B. 387	Madelyn Gardens	0.134
S.B. 387	Master's Heights (Sussex)	0.145
SD-72	Mayview Manor	0.549
S.B. 387	McDaniel Heights	0.127
Developer	Middleboro Manor	0.650
S.B. 387	Midvale	0.598
S.B. 387	Monterey Farms	0.295
S.B. 387	Moores Lake Development (Kent)	0.430
Developer	Morris Estates (Kent)	0.719
Developer	Mumford Manor (Sussex)	0.133
S.B. 387	Murray's Development (Sussex)	0.371
S.B. 387	Naaman's Manor	0.370
S.B. 387	Nanticoke Acres (Sussex)	1.497
S.B. 387	North Hills	0.538
S.B. 387	Northurst	0.187
Developer	Oak Hill	2.254
Developer	Oak Lane Manor	0.637
Developer	Overview Gardens	2.892
Developer	Parkwood	0.191
Developer	Penarth	0.077
Developer	Penn Acres	0.445
Developer	Pennrock	0.726
S.B. 387	Penny Hill Terrace	0.063
S.B. 387	Perry Park	0.217
S.B. 387	Pleasant Hills	0.971
S.B. 387	Pleasantville	0.320
Developer	Radnor Green	1.697
S.B. 387	Rehoboth Manor (Sussex)	0.322
S.B. 387	Richardson Park	0.044
S.B. 387	Ridgewood (Kent)	0.106
S.B. 387	Riverdale (Sussex)	0.868
S.B. 387	Riverside Gardens	0.123
S.B. 387	Riverview (Sussex)	0.369

TABLE V (Continued)

SUBURBAN DEVELOPMENT DIVISION
MILEAGE OF SUBURBAN STREETS ACCEPTED
1956-1957

Contract	Development	Mileage
Developer	Rodney Village (Kent)	1.165
Developer	Rolling Hills	0.261
S.B. 387	Rolling Park	0.783
Developer	Roosevelt Avenue	0.101
S.B. 387	Roosevelt Avenue (Kent)	0.409
S.B. 387	Roselle Terrace	0.089
S.B. 387	Roseville Park	0.038
S.B. 387	Saulsbury Farm (Kent)	0.361
S.B. 387	Scarborough Avenue Ext. (Sussex)	0.189
S.B. 387	Sedgely Farms	1.138
Developer	Shellburne	0.287
Developer	Sherwood Park	1.553
Developer	Shipley Heights	0.120
S.B. 387	Silver Lake Manor (Sussex)	0.707
S.B. 387	Silverside Heights	0.145
S.B. 387	Silview	0.071
S.B. 387	Stanton Crest	0.208
S.B. 387	Stanton Heights	0.131
S.B. 387	Stockdale	0.369
S.B. 387	Stony Crest	0.340
Developer	Swanwyck Estates	3.124
S.B. 387	Taylor Estates (Kent)	0.573
S.B. 387	Tuxedo Park	0.093
S.B. 387	Washington Heights (Sussex)	0.113
S.B. 387	Weber Tract	0.422
SD-75	Westfield	0.111
S.B. 387	Westover Hills	0.554
Developer	Westview	0.253
S.B. 387	Westview (Sussex)	2.408
S.B. 387	White Street (Sussex)	0.246
S.B. 387	Wilmington Manor	0.932
S.B. 387	Wilmont	0.186
Developer	Windermere	0.669
Developer	Windsor Hills	0.257
Developer	Windybush	0.444
S.B. 387	Windybush	0.338
Developer	Woodbrook	1.323
S.B. 387	Woodcrest	0.639
S.B. 387	Woodland Beach (Kent)	0.970
S.B. 387	Woodside Hills	0.257
Developer	Woodside Manor	0.222
S.B. 387	Woods Manor (Kent)	0.260
TOTAL MILEAGE ACCEPTED		101.787

TABLE VI
SUBURBAN DEVELOPMENT DIVISION
S.D. PROJECTS 1956-57

1. S.D. Projects Accepted:

Contract	Development	Mileage	Cost
SD-72	Mayview Manor	0.549	\$ 40,760.89
SD-73	Elmhurst	0.210	14,909.44
		0.759	\$ 55,670.33

2. S.D. Projects Under Construction:

Contract	Development	Mileage	Bid Price
SD-66	Newport Heights	0.576	\$ 41,726.95
SD-70A	Woodside Hills—Gwinhurst	0.238	20,677.75
SD-77	Westwood	0.352	30,060.85
SD-78	Keystone	0.171	13,848.60
SD-79	Woodwards Addition	0.350	20,677.75
SD-80	Concord Manor	0.126	10,602.14
		1.813	\$137,594.04

3. S.D. Projects Rejected By Vote Of Freeholders:

Contract	Development	Mileage	Probable Cost
SD-81	Taylor Estates	0.497	\$ 28,235.00
SD-82	Cranston Heights	0.708	59,505.05
		1.205	\$ 87,740.05

4. S.D. Projects Under Design:

Contract	Development	Mileage	Probable Cost
SD-83	Marshallton Heights	1.212	\$ 96,960.00
SD-84	Rolling Park	0.592	26,480.00
SD-85	Belford Manor	0.331	23,680.00
		2.135	\$147,120.00

5. S.D. Projects Rejected, Petition Illegal:
None

	Projects	Miles	Probable Cost
Average Cost Per Mile —			\$72,416.10.
GRAND TOTAL	13	5.912	\$428,124.42

TABLE VII
SUBURBAN DEVELOPMENT DIVISION
PROJECTS FOR WHICH BOND WAS RECEIVED
1956-57

Subdivision	Mileage	Cost of Construction
Ashbourne Hills, Section 5	0.624	\$ 23,587.50
Ashley Heights	0.469	26,141.50
Ashley Heights	0.265	15,025.00
Birchwood Park	0.397	29,079.10
Blue Rock Manor	0.664	54,516.50
Brandywine Estates	0.001	4,100.00
Brookmont Farms	0.640	32,500.00
Carrcroft Crest	0.265	17,575.80
Carrcroft Crest	0.486	36,647.00
Cedarbrook Acres (Kent)	0.100	4,574.50
Claymont Heights	0.858	47,610.00
Claymont Heights	0.302	16,450.20
Claymont Village	0.237	24,482.00
Del Park Manor	0.617	48,278.80
Del Park Manor	0.528	22,576.50
Del Park Manor	0.704	39,210.40
Forest Hills Park	0.379	20,000.00
Foulk Woods	0.431	30,671.30
Foulk Woods	0.188	9,667.10
Georgian Terrace	0.251	14,725.70
Graylyn Crest, Section 3	1.467	116,255.50
Green Acres	0.491	42,096.40
Green Acres	0.215	12,309.00
Green Acres	0.356	23,902.30
Harmony Hills	0.521	25,000.00
Hillside Heights	0.792	66,869.50
Hillside Heights	0.685	32,539.90
Kiamensi Heights	0.142	8,711.30
Kiamensi Heights	0.128	6,665.10
Klair Estates	0.198	10,000.00
Limestone Gardens	0.670	40,000.00
Middleboro Manor	0.682	42,045.00
Oak Lane Manor Addition	0.580	13,096.00
Oakwood Hills, Section 1	0.399	22,269.00
Parkwood	0.209	12,421.20
Pembrey	0.175	20,000.00
Penn Acres, Section 2	0.540	45,000.00
Phillips Heights	0.048	4,250.00
Radnor Green	0.599	46,015.00
Rolling Hills	0.225	8,570.00
Shady Lane (Kent)	0.201	16,845.00
Shipley Heights	0.104	7,000.00
Washington Heights	0.083	4,578.00
Windermere	0.740	49,748.00
Windy Hills	0.196	14,345.00
TOTALS	18.852	\$1,207,950.10
35 Developments	Average Cost Per Mile	\$ 64,075.40

TABLE VIII
SUBURBAN DEVELOPMENT DIVISION
PLANS EXAMINED FOR NEW SUBDIVISIONS
July 1956 to June 1957

Subdivision	Acreage	Miles of Streets
Anglesey	35.16	0.710
Ashbourne Hills, Section 6	15.85	0.502
Buckingham Heights Extension	9.75	0.213
Catalina Estates, Section 2	58.60	1.667
Cedar Brook Acres (Kent)	8.96	0.208
Fairfield	18.95	0.672
Georgian Terrace	18.70	0.492
Glendale, Section 2	36.18	1.042
Graylyn Crest, Section 4	19.80	0.606
Idela, Section B.	1.82	0.057
Klair Estates, Section D.	16.75	0.341
Lancashire	201.88	5.500
Latimer Estates	6.00	0.114
Llangollen Estates, Section B.	102.28	2.434
McDaniel Crest Addition	22.20	0.518
Oakwood Hills, Section 2	20.00	0.417
Penarth, Section 2	7.63	0.208
Penn drew Manor	22.04	0.653
Perth	42.75	0.966
Radnor Green, Section 2	62.72	1.591
Red Mill Farms, Section 1	29.90	0.748
Ridgewood	17.30	0.431
Rogers Manor Development	6.66	0.197
Shady Lane (Kent)	40.40	0.871
Todd Estates	92.70	2.955
West Park	19.87	0.559
Total	934.85	24.672