

Inter-County Bridge, Imlaydale, over Musconetcong River, Hunterdon and Warren Counties.

TWENTIETH ANNUAL REPORT

OF THE

Commissioner of Public Roads

For the Year ending October 31st

1913



TRENTON, N. J.
MacCrellish & Quigley, Printers.

1913

OFFICE OF COMMISSIONER OF PUBLIC ROADS,
TRENTON, NEW JERSEY, December 2d, 1913.

*To the Honorable Leon R. Taylor, Acting Governor, and the
Legislature of New Jersey:*

I have the honor to submit the Twentieth Annual Report of the Commissioner of Public Roads for the fiscal year ending October 31st, 1913, with such comments and suggestions as existing circumstances seem to require.

E. A. STEVENS,
Commissioner of Public Roads.

FINANCIAL STATEMENT.

Statement of Appropriations—November 1, 1912, to October 31, 1913.

PUBLIC ROAD FUNDS.			<i>Carried Fwd. On Contract.</i>	<i>Annual Appropriation.</i>	<i>Supplemental Appropriation.</i>	<i>Total Amt. Available.</i>	<i>Expended.</i>	<i>Lapsed to State Treasury.</i>	<i>Bal. Fwd. On Contract.</i>
Public Roads, 1908-1909,			\$29,161 38	.....	.....	\$29,161 38	\$27,264 20	\$1,897 18	.....
" " 1909-1910,			50,714 27	.....	.....	50,714 27	13,572 31	.....	\$37,141 96
" " 1910-1911,			135,056 03	.....	.....	135,056 03	122,330 00	.....	12,726 03
" " 1911-1912,			256,311 64	.....	.....	256,311 64	256,311 64	.....	.....
" " 1912-1913,				\$300,000 00	.....	300,000 00	138,892 35	.....	161,107 65
State Road Fund,					165,000 00	165,000 00	.....	.....	165,000 00
Totals,			\$471,243 32	\$300,000 00	\$165,000 00	\$936,243 32	\$558,370 50	\$1,897 18	\$375,975 64
GENERAL APPROPRIATIONS.									
Salary of Commissioner,				\$5,000 00	.....	\$5,000 00	\$5,000 00	.....
Salary of Supervisor,				4,000 00	.....	4,000 00	4,000 00	.....
Salary of Division Engineers,				5,100 00	\$1,000 00	6,100 00	5,850 00	\$250 00	
Clerical and Office Expenses,				12,000 00	500 00	12,500 00	12,500 00	.....
Tax Data,					1,500 00	1,500 00	585 26	914 74	
Automobiles,				5,000 00	.....	5,000 00	4,999 80	20	
Convict Labor,					75,000 00	75,000 00	44,683 24	30,316 76	
Totals,				\$26,100 00	\$83,000 00	\$109,100 00	\$77,618 30	\$31,481 70	
MOTOR VEHICLE RECEIPTS.									
Motor Vehicle Funds—General,					<i>Carried Forward.</i>	<i>Receipts.</i>	<i>Total Amt. Available.</i>	<i>Expended.</i>	<i>Balance Carried Fwd.</i>
Ocean Highway,					\$160,231 76	.....	.....	.....	\$238,281 85
					9,585 44	.....	.....	.....	2,968 87
Totals,					\$169,817 20	\$801,439 61	\$971,256 81	\$560,188 89	\$241,250 72

COMMISSIONER OF PUBLIC ROADS.

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CASH STATEMENT.

November 1, 1912, to October 31, 1913.

PUBLIC ROAD FUNDS.

Paid on Contracts,	\$467,767 95	
Paid in advance for inspection on 40% Roads,	16,518 82	
Total,		\$484,286 77
Paid on Extras,		35,032 05
Paid for Inspection, Final on 1/3 Roads,	\$7,762 48	
" " Final on 40% Roads,	2,927 26	
		\$10,689 74
Paid for Inspection not charged to Roads:		
Salary of Extra Inspectors,	\$3,669 50	
Salary of Regular Inspectors,	7,194 34	
Expenses of Regular Inspectors,	886 50	
		11,750 34
Total Cost of Inspection,		22,440 08
Paid for Engineering,		8,085 63
Paid for Survey of State Highway,		8,525 97
Total Payments from Public Road Funds,		\$558,370 50

MOTOR VEHICLE FUNDS.

Paid on Allotments for Maintenance Work,	\$495,902 49	
Paid for Salaries of Asst. Supervisors,	\$250 00	
Amount Lapsing to State Funds,	2,750 00	
Total,		3,000 00
Amount Lapsing to State Funds, Expenses of Asst. Supervisors,		3,000 00
Paid for Cautionary Signs,		18 00
Paid for Direction Signs,		30 00
Paid for Survey of State Highway,		568 40
Paid for Expenses of Motor Vehicle Department,	\$54,216 56	
Amount Lapsing to State Funds,	3,453 44	
Total,		57,670 00
Total Payments from Motor Vehicle Funds,		\$560,188 89

Balance Sheet—October 31, 1913.

PUBLIC ROAD FUNDS.

ASSETS.

Cash Balance, Appropriation for Public Roads, 1909-1910,	\$37,141 96	
" " " " " " 1910-1911,	12,726 03	
" " " " " " 1911-1912,		
" " " " " " 1912-1913,	161,107 65	
" " State Road Fund, Supplemental, 1912-1913,	165,000 00	
* " " " " " Annual, 1913-1914,	450,000 00	
		\$825,975 64

LIABILITIES.

Approved Contracts for New Construction Outstanding (See Schedule A),	\$671,008 22	
Approved Extras Outstanding (See Schedule A),	12,669 19	
Reserve for Extras, Inspection and Engineering,	124,295 09	
		807,972 50
Surplus,		\$18,003 14

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MOTOR VEHICLE FUNDS.

ASSETS.

Cash Balance,	\$241,250 72
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LIABILITIES.

Allotments for Maintenance (See Schedule B),	\$412,806 45
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† Deficit,	\$171,555 73
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* This appropriation of \$450,000 becomes available November 1, 1913.

† This deficit is caused by the approval of allotments in anticipation of motor vehicle collections.

COMMISSIONER OF PUBLIC ROADS.

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Cost of Roads, 1913.

In compliance with chapter 58, laws of 1905, the following statement of cost of roads is submitted.

In the following roads the cost allowed does not include engineering and inspection, and the State's share is one-third of the said cost allowed.

Cape May County.

Woodbine-Tuckahoe road, first section,	Miles. 4.208		
Cost allowed,		\$14,276 25	
State's share,			\$4,758 75

Hunterdon County.

Lebanon-Clinton road, for surface dressing asphalt binder,	Miles.		
Cost allowed,		\$2,942 20	
State's share,			\$980 73
*Mileage reported in 1912.			

Ocean County.

Lakehurst-Brown's Mills road, Eastern section, ...	Miles. 5.777		
Cost allowed,		\$30,086 43	
State's share,			\$10,028 81

Sussex County.

Hamburg-Sussex road,	Miles. 2.868		
Cost allowed,		\$26,152 85	
State's share,			\$8,717 62
Newton-Stanhope road, Whitehall section,	0.673		
Cost allowed,		6,574 61	
State's share,			2,191 54
Total for county,	3.541	\$32,727 46	\$10,909 16
Mileage paid for from 1913 appropriation,	13.526		
Cost allowed on contracts paid from 1913 appropriation,		\$80,032 34	
State's share on contracts paid from 1913 appropriation,			\$26,677 45

In compliance with chapter 395, laws of 1912, the following statement of cost of roads is submitted.

In the following roads the cost allowed included engineering and inspection, and the State's share is forty per cent. of the said cost allowed, except on bridge work, in which case it is twenty per cent.

Bergen County.

Saddle River-Broadway road,	Miles. 0.209		
Cost allowed,		\$2,796 93	
State's share paid from 1913 appropriation on contract,			\$1,118 77

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Burlington County.

	Miles.			
Cookstown-New Egypt road,	1.373			
Cost allowed,		\$9,345 78		
State's share paid from 1913 ap- propriation on contract,			\$3,610 18	
State's share paid from 1913 ap- propriation on supervision,			33 43	
State's share paid from 1912 ap- propriation on supervision,			94 70	
				\$3,738 31
Cookstown Bridge,				
Cost allowed,		\$4,000 00		
State's share paid from 1913 ap- propriation on contract,			\$800 00	
New Egypt-Jacobstown-Chesterfield road,	4.091			
Cost allowed,		\$18,056 55		
State's share paid from 1913 ap- propriation on contract,			\$6,819 70	
State's share paid from 1913 ap- propriation on supervision, ...			379 12	
State's share paid from 1912 ap- propriation on supervision, ...			23 80	
				\$7,222 62
Hartford-Fairview road,	1.093			
Cost allowed,		\$8,853 54		
State's share paid from 1913 ap- propriation on contract,			\$3,354 54	
State's share paid from 1913 ap- propriation on supervision, ...			186 88	
				\$3,541 42
Lewistown-Wrightstown-Cookstown road,	5.941			
Cost allowed,		\$32,124 80		
State's share paid from 1913 ap- propriation on contract,			\$11,908 91	
State's share paid from 1913 ap- propriation on supervision, ...			917 31	
State's share paid from 1912 ap- propriation on supervision, ...			23 70	
				\$12,849 92
Lewistown-Wrightstown-Cookstown road, Wrightstown Cut-off,	0.181			
Cost allowed,		\$764 82		
State's share paid from 1913 ap- propriation on contract,			\$305 93	
Pemberton-Vincentown road,	1.565			
Cost allowed,		\$5,686 13		
State's share paid from 1913 ap- propriation on contract,			\$2,105 78	
State's share paid from 1913 ap- propriation on supervision, ...			168 67	
				\$2,274 45
Total for county,	14.244	\$78,831 62		\$30,732 65

Cumberland County.

	Miles.			
Malaga road, second section,	5.595			
Cost allowed,		\$13,943 55		
State's share paid from 1913 ap- propriation on contract,			\$5,390 24	
State's share paid from 1913 ap- propriation on supervision, ...			112 18	
State's share paid from 1912 ap- propriation on supervision, ...			75 00	
				\$5,577 42
Malaga road, second section, bridge,				
Cost allowed,		\$1,278 37		
State's share paid from 1913 ap- propriation on contract,			255 67	
Total for county,	5.595	\$15,221 92		\$5,833 09

COMMISSIONER OF PUBLIC ROADS.

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Hunterdon County.

	Miles.			
Hampton Borough road,	0.612			
Cost allowed,		\$12,107	26	
State's share paid from 1913 ap- propriation on contract,				\$4,638 90
State's share paid from 1913 ap- propriation on supervision, ...				204 00
				<u>\$4,842 90</u>

Middlesex County.

	Miles.			
Perth Amboy-Keasbey road, Keasbey creek bridge,			
Cost allowed,		\$5,600	00	
State's share paid from 1913 ap- propriation on contract,				\$1,120 00

Monmouth County.

	Miles.			
Water Witch section, Ocean Boule- vard,			
Cost allowed,		\$7,312	80	
State's share paid from 1913 ap- propriation on contract,				\$2,925 12
Red Bank Holmdel road, third section bridge,			
Cost allowed,		\$3,660	40	
State's share paid from 1913 ap- propriation on contract,				732 08
Total for county,	\$10,973	20	<u>\$3,657 20</u>

Ocean County.

	Miles.			
Lakehurst-Brown's Mills road, westion section "A,"	2.841			
Cost allowed,		\$16,734	14	
State's share paid from 1913 ap- propriation on contract,				\$6,192 66
State's share paid from 1913 ap- propriation on supervision, ...				501 00
				<u>\$6,693 66</u>

Union County.

	Miles.			
Chestnut Street paving,	0.686			
Cost allowed,		\$20,534	87	
State's share paid from 1913 ap- propriation on contract,				\$7,850 95
State's share paid from 1913 ap- propriation on supervision, ...				363 00
				<u>\$8,213 95</u>
South Avenue,	1.003			
Cost allowed,		\$21,329	13	
State's share paid from 1913 ap- propriation on contract,				\$8,444 65
State's share paid from 1913 ap- propriation on supervision, ...				87 00
				<u>\$8,531 65</u>
South Avenue bridge, .....	....		
Cost allowed,		\$416	00	
State's share paid from 1913 ap- propriation on contract,				\$83 20
Total for county,	1.689	\$42,280	00	<u>\$16,828 80</u>

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Miles.

Mileage paid for from 1913 appropriation (40% roads),	25.190			
Cost allowed on contracts paid from 1913 appropriation,		\$184,545	07	
State's share on contracts paid from 1913 appropriation,			\$70,609	87
State's share on contracts paid from 1912 appropriations,				\$217 20
Mileage paid for from 1913 appropriation (33 $\frac{1}{4}$ % roads),	13.526			
Cost allowed on contracts paid from 1913 appropriation,		\$80,032	34	
State's share on contracts paid from 1913 appropriation,			\$26,677	45
Total mileage paid for from 1913 appropriation,	38.716			
Total cost allowed on contracts paid from 1913 appropriation,		\$264,577	41	
Total State's share on contracts paid from 1913 appropriation,			\$97,287	32
Total State's share on contracts paid from 1912 appropriation,				\$217 20

In compliance with chapter 58, laws of 1905, the following statement of cost of roads is submitted.

In the following roads the cost allowed does not include engineering and inspection, and the State's share is one-third of the said cost allowed.

Completed and payment made during fiscal year 1913, but paid for from the appropriation for 1912.

Bergen County.

	Miles.			
Franklin turnpike, first section,	1.808			
Cost allowed,		\$44,442	48	
State's share,				\$14,814 16
Sylvan Avenue, southern section (Alpine),	0.487			
Cost allowed,		8,169	90	
State's share,				2,723 30
	2.295	\$52,612	38	\$17,537 46

Camden County.

	Miles.			
Camden and Westfield turnpike, mileage added in 1904, .....	....		
Cost allowed,		\$39,758	88	
State's share,				\$13,252 96
Gibbsboro and Berlin road,	2.924			
Cost allowed,		10,246	17	
State's share,				3,415 39
	2.924	\$50,005	05	\$16,668 35

Cape May County.

	Miles.			
Seashore road, third section,	6.589			
Cost allowed,		\$24,751	61	
State's share,				\$8,250 54

Essex County.

	Miles.			
Old Short Hills road,	2.600			
Cost allowed,		\$26,939	26	
State's share,				\$8,979 75

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Hunterdon County.

Clinton-Hampton road,	Miles. 5.227		
Cost allowed,		\$65,533 95	
State's share,			\$21,844 65

Middlesex County.

South River-New Brunswick road, via Thomas and Prospect streets,	Miles. 0.757		
Cost allowed,		\$13,650 52	
State's share,			\$4,550 17
Highland Park-Bonhamtown road or Woodbridge avenue,	3.902		
Cost allowed,		\$69,812 33	
State's share,			\$23,270 78
Spottswood-Englishtown road, second section,	3.680		
Cost allowed,		\$22,361 25	
State's share,			\$7,453 75
	8.339	\$105,824 10	\$35,274 70

Monmouth County.

Englishtown-Jamesburg road,	Miles. 1.115		
Cost allowed,		\$8,280 00	
State's share,			\$2,760 00

Ocean County.

Lakewood-New Egypt road, western section,	Miles. 6.110		
Cost allowed,		\$31,190 00	
State's share,			\$10,396 67
Lakewood-New Egypt road, middle section,	5.445		
Cost allowed,		18,951 00	
State's share,			6,317 00
	11.555	\$50,141 00	\$16,713 67

Passaic County.

Weasel road (River road),	Miles. 0.648		
Cost allowed,		\$12,881 96	
State's share,			\$4,293 99

Somerset County.

Plainville road,	Miles. 2.560		
Cost allowed,		\$28,618 25	
State's share,			\$9,539 42
Mileage paid for from 1912 appropriation,	43.852		
Cost allowed on contracts paid for from 1912 appropriation,		\$425,587 56	
State's share on contracts paid for from 1912 appropriation,			\$141,862 53

In compliance with chapter 395, laws of 1912, the following statement of the cost of roads is submitted.

In the following roads the cost allowed includes engineering and inspection, and the State's share is forty per cent. of the said cost allowed, except on bridge work, in which case it is twenty per cent.

Completed and payment made during fiscal year 1913, but paid for from the appropriation for 1912.

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Atlantic County.

	Miles.		
Main road, Hammonton,	1.758		
Cost allowed,		\$5,425	70
State's share paid from 1912 ap- propriation on contract,			\$1,996 28
State's share paid from 1912 ap- propriation for supervision, ...			129 00
State's share paid from 1913 ap- propriation for supervision, ...			45 00
Total State's share,			\$2,170 28

Bergen County.

	Miles.		
Riverside avenue,	2.275		
Cost allowed,		\$52,884	13
State's share paid from 1912 ap- propriation on contract,			\$20,699 99
State's share paid from 1912 ap- propriation for supervision, ...			341 16
State's share paid from 1913 ap- propriation for supervision, ...			112 50
			\$21,153 65

Monmouth County.

	Miles.		
Sea Bright-Highlands road,	1.666		
Cost allowed,		\$10,717	20
State's share paid from 1912 ap- propriation on contract,			\$3,736 33
State's share paid from 1912 ap- propriation for supervision, ...			288 00
State's share paid from 1913 ap- propriation for supervision, ...			262 55
Total State's share,			\$4,286 88

Morris County.

	Miles.		
Boulevard, Boonton,	1.990		
Cost allowed,		\$46,981	05
State's share paid from 1912 ap- propriation on contract,			\$18,156 42
State's share paid from 1912 ap- propriation for supervision, ...			51 00
State's share paid from 1913 ap- propriation for supervision, ...			585 00
Total State's share,			\$18,792 42
Landing-Mt. Arlington road,	2.534		
Cost allowed,		\$57,043	88
State's share paid from 1912 ap- propriation on contract,			\$21,911 55
State's share paid from 1912 ap- propriation for supervision, ...			67 50
State's share paid from 1913 ap- propriation for supervision, ...			838 50
Total State's share,			\$22,817 55
	4.524	\$104,024	93
			\$41,609 97

Ocean County.

	Miles.		
Lakewood-New Egypt road, eastern section,	1.995		
Cost allowed,		\$6,370	78
State's share paid from 1912 ap- propriation on contract,			\$2,290 31
State's share paid from 1913 ap- propriation for supervision, ...			258 00
Total State's share,			\$2,548 31

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Somerset County.

	Miles.		
South Branch road,	0.446		
Cost allowed,		\$4,863	32
State's share paid from 1912 ap- propriation on contract,			\$1,795 33
State's share paid from 1913 ap- propriation for supervision, ...			150 00
Total State's share,			\$1,945 33

Union County.

	Miles.		
Shunpike road, end section,	1.195		
Cost allowed,		\$23,773	31
State's share paid from 1912 ap- propriation on contract,			\$5,543 74
State's share paid from 1913 ap- propriation for supervision, ...			477 00
State's share paid from 1914 ap- propriation will be reported next year,			3,488 58
Total State's share,			\$9,509 32
Morris avenue,	2.917		
Cost allowed,		\$43,961	23
State's share paid from 1912 ap- propriation on contract,			\$17,359 49
State's share paid from 1913 ap- propriation for supervision, ...			225 00
Total State's share,			\$17,584 49
Westfield avenue extension,	0.349		
Cost allowed,		\$12,875	57
State's share paid from 1912 ap- propriation on contract,			\$4,883 23
State's share paid from 1913 ap- propriation for supervision, ...			267 00
Total State's share,			\$5,150 23
Westfield ave. extension, bridge work,			
Cost allowed,		\$7,300	00
State's share paid from 1912 ap- propriation,			\$1,460 00
			\$1,460 00
Springfield avenue,	1.766		
Cost allowed,		\$32,285	16
State's share paid from 1912 ap- propriation on contract,			\$12,803 06
State's share paid from 1912 ap- propriation for supervision, ...			33 00
State's share paid from 1913 ap- propriation for supervision, ...			78 00
Total State's share,			\$12,914 06
Chestnut street, storm water drain,			
Cost allowed,		\$4,995	94
State's share paid from 1912 ap- propriation on contract,			\$1,813 38
State's share paid from 1912 ap- propriation for supervision, ...			50 00
State's share paid from 1913 ap- propriation for supervision, ...			135 00
Total State's share,			\$1,998 38
Total for county,	6.227	\$125,191	21
		\$45,127	90
			\$3,488 58

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Mileage paid for from 1912 appropriation,	18.891		
Cost allowed on contracts paid from 1912 appropriation,		\$309,477 27	
State's share on contracts paid from 1912 appropriation,			\$114,449 11
State's share on supervision paid from 1912 appropriation,			959 66
State's share on supervision paid from 1913 appropriation,			3,433 55
State's share on contract paid from 1914 appropriation,			<u>\$3,488 58</u>
State's share not including amount from 1914 appropriation,		\$118,842 32	

The following roads were paid for from the appropriation for 1911, but they were completed and payment made during the fiscal year 1913.

Atlantic County.

	Miles.		
Shore road,	9.258		
Cost allowed on final partial payment,		\$75,507 42	
State's share on final partial payment,			\$25,169 18

Bergen County.

	Miles.		
Slyvan avenue (or Boulevard), Tenafly,	1.536		
Cost allowed,		\$20,779 23	
State's share,			\$6,926 41
Essex street,	1.604		
Cost allowed,		36,128 20	
State's share,			12,042 73
Franklin turnpike, second section,	0.857		
Cost allowed,		20,661 54	
State's share,			6,887 18
Total for county,	3.997	\$77,568 97	\$25,856 32

Essex County.

	Miles.		
Normal avenue,	0.755		
Cost allowed,		\$38,174 40	
State's share,			\$12,724 80

Gloucester County.

	Miles.		
Mantua Grove-Mickleton road,	3.503		
Cost allowed,		\$49,510 92	
State's share,			\$16,503 64

Middlesex County.

	Miles.		
Spottswood-Englishtown road, first section,	2.015		
Cost allowed,		\$11,284 94	
State's share,			\$3,749 65
Franklin Park-Kingston road, partial payment, ....	....	
One-half cost allowed on partial payment,		22,119 09	
One-half State's share on partial payment,			7,373 03
Total for county,	2.015	\$33,368 03	\$11,122 68

Passaic County.

	Miles.		
Midvale-Greenwood Lake road,	2.321		
Cost allowed,		\$23,690 14	
State's share,			\$7,896 71

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Salem County.

	Miles.		
Woodstown Road,	0.459		
Cost allowed,		\$12,576 55	
State's share,			\$4,192 18

Somerset County.

	Miles.		
Liberty Corner road, first section,	2.032		
Cost allowed,		\$34,474 37	
State's share,			\$11,491 46
Franklin Park-Kingston road, partial payment, ....	....	
One-half cost allowed on partial payment,		22,119 09	
One-half State's share on partial payment,			7,373 03
Total for county,	2.032	\$56,593 46	\$18,864 49
Mileage paid from 1911 appropriation,	24.340		
Cost allowed on contracts paid from 1911 appropria- tion,		\$366,989 89	
State's share on contract paid from 1911 appropria- tion,			\$122,330 00

A partial payment was made on the following road from the appropriation for 1910.

Hunterdon County.

	Miles.		
White House-Lebanon road,		
Cost allowed on partial payment,		\$40,716 93	
State's share on partial payment,			\$13,572 31

The following road was paid for from the appropriation for 1909, but it was completed and payment made during the fiscal year 1913:

Sussex County.

	Miles.		
Newton-Stanhope road,	9.087		
Cost allowed,		\$81,792 60	
State's share,			\$27,264 20

Roads taken over and maintained by county (added to 1913 mileage).

	Miles.
Salem County—Shirley-Deerfield road, .....	.808
Salem County—Pennsville-Penns Grove road,	5.508
Salem County—Alloway-Quinton road,	2.928
Salem County—Hancock's Bridge-Canton road,	4.837
Total,	14.081

Total length of improved roads added to mileage during fiscal year ending October 31, 1913, and total amount of money allowed and expended during same period.

	Miles.	Cost Allowed.	State's Share.
Paid from 1913 appropriation,	38.716	\$264,577 41	\$97,504 52
Paid from 1912 appropriation,	62.743	735,064 83	260,704 85
Paid from 1911 appropriation,	24.340	366,989 89	122,330 00
Paid from 1910 appropriation,	*	40,716 93	13,572 31
Paid from 1909 appropriation,	9.087	81,792 60	27,264 20
Taken over by County,	14.081		
	148.967	\$1,488,141 66	\$521,375 88

* Partial payment; road not yet accepted.

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The following roads are approaching completion, but were not finished in time to be reported in the preceding lists.

<i>County.</i>	<i>Name of Road.</i>	<i>Miles.</i>	<i>Cost. Approximate.</i>
Atlantic,	May's Landing-Tuckahoe,	11.867	\$28,499 06
Bergen,	Hackensack Street (First and Third sections), ..	1.757	30,000 00
Burlington,	Wrightstown-Pointsville,	3.099	16,427 72
	Brown's Mills-Lakehurst,	5.514	24,911 03
	Mt. Holly-Lumberton,	1.238	5,859 18
Cape May,	Cape May Point Boulevard,	2.368	10,798 60
Cumberland,	Landis Avenue,	1.4583	18,933 19
Essex,	Pleasant Valley Way,	3.654	29,624 95
	Clinton Avenue,	1.300	14,000 00
	Cedar Street,	1.666	21,531 36
	Gregory Avenue,	1.675	14,000 00
	Myrtle Avenue,	1.155	25,000 00
Hunterdon,	High Bridge-Califon (First section),	3.319	44,240 86
	Flemington-Frenchtown (First section),	6.067	77,712 24
Middlesex,	Franklin Park-Kingston (½ in Somerset),	2.624	27,648 86
Monmouth,	Water Witch section of Ocean Highway,	2.310	20,000 00
	Red Bank-Holmdell (Third section),	1.080	6,661 20
Passaic,	Valley Road,	3.146	80,000 00
	Newark-Pompton (First section),	2.540	58,000 00
	Newark-Pompton (Second section),	2.116	56,231 11
Salem,	Quinton Road,	2.656	15,181 74
	Penns Grove-Pedricktown,	4.097	38,515 35
Somerset,	Franklin Park-Kingston (½ in Mid.),	2.625	27,648 86
Sussex,	Franklin Furnace-Stockholm,	5.476	62,916 82
Union,	East Broad Street,	1.200	31,000 00
	Morris Avenue (Western section),	0.780	12,000 00
	Morris Avenue (Eastern section),	2.059	25,244 56
Warren,	Blairstown-Columbia,	4.487	53,500 00
	Washington-Asbury,	5.797	76,777 21
	Lincoln Street,	0.379	4,154 38

TOTAL NUMBER OF SQUARE YARDS OF EACH CLASS OF ROAD BUILT IN EACH COUNTY SINCE THE PASSAGE OF THE STATE AID LAW.

COUNTY.	Macadam. A	Macadam with Bituminous Dressing. B	Bitu- minous Mac- adam. C	Con- crete Sur- face. D	Bituminous Mortar Macadam.		Hot Mixed Bituminous Cements.				Cold Mixed. H	Gravel. I	Concrete Base with Bituminous Top Dressing. J	Oyster Shells. K	Totals.
					E	E-E	G-1	G-2	G-3	G-4					
N Atlantic,	28,776										162,934	1,098,617			1,290,327
Bergen,	241,561	53,212	39,673				27,049				51,605				413,100
Burlington,	1,113,449											416,327			1,529,776
Camden,	601,886	19,712									131,165	226,656			979,419
Cape May,												740,973			740,973
Cumberland,												260,731			260,731
Essex,	1,066,459	36,541													1,103,000
Gloucester,	239,313							69,557			20,357	494,281			823,508
Hudson,	55,665										8,759				64,424
Hunterdon,	228,086	104,514													332,600
Mercer,	1,164,462	66,677													1,231,139
Middlesex,	1,133,661	108,416									15,981	248,232			1,506,290
Monmouth,	517,566											635,014			1,152,580
Morris,	492,181	24,818									99,230				616,229
Ocean,												1,167,215			1,167,215
Passaic,	595,980	40,040					48,550								684,570
Salem,	44,124									16,115	10,409	287,572		156,494	514,714
Somerset,	766,807	36,976													803,783
Sussex,	86,673	26,793	103,452												216,918
Union,	173,026	54,456									152,932		10,513		390,927
Warren,	371,498	70,530													442,028
	8,921,173	642,685	143,125				75,599	69,557		16,115	653,372	5,575,618	10,513	156,494	16,264,251

COMMISSIONER OF PUBLIC ROADS.

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Description and Statement of Cost of Roads Improved in 1913.

ATLANTIC COUNTY.

Shore Road, 9.258 Miles Long.

This road begins at the railroad in Absecon and runs south-westerly through Absecon, Pleasantville, Bakersville, Linwood, Seaview and Bethel to Somer's Point, New Jersey avenue.

The completion of this improvement extends the Ocean Highway as a finished road throughout its entire distance across Atlantic county. The road is graded and paved with cold-mixed bituminous concrete to a width of thirty feet; the depth of the completed pavement is six inches.

Nothing now remains to be done to complete the southern end of the Ocean Highway except the construction of a bridge across Great Egg Harbor to Beasley's Point.

The maximum grade was and is three per cent.

Detailed statement of the cost of the Shore road from the bridge in Absecon City and extending to New Jersey avenue, Somer's Point City, Atlantic county. Total length, 48,880.3 feet or 9.258 miles.

Width of pavement, 30 feet.
Length of pavement, 48,880.3 feet.
Depth of pavement, 6 inches.
Width between curbs, 30 feet.

Excavation, 24,230 cubic yards, at 28 cents,	\$6,784 40
Type H, 162,934.33 square yards at \$1.16½,	189,818 49
	<hr/>
	\$196,602 89
Inspection,	1,692 00
Engineering,	7,864 12
	<hr/>
Total cost of road,	\$206,159 01
	<hr/>
Paid by county,	\$156,877 52
Lump sum contract price,	196,602 80
Total allowed by the State,	131,068 60
	<hr/>
One-third of above, amount of State's share,	\$43,689 53
Amount paid by State on account,	24,544 79
	<hr/>
Amount now due from State,	\$19,144 74

TWENTIETH ANNUAL REPORT

Maximum grade before,	3 per cent.
Maximum grade after,	3 per cent.

E. D. RIGHTMIRE,
Engineer.
FRANK STEELMAN,
Inspector.

Main Road, Hammonton, 1.758 Miles Long.

This improvement begins at the Camden county line and extends southeasterly to Middle road, the main outlet to Burlington county and the north. As a result this road forms a very important link between the White Horse pike, in Camden county, the improved roads of Burlington county on the north and Atlantic City on the east.

The graded width is thirty feet, and the graveled surface has a width of twenty feet, varying in depth from eight inches in the center to six inches on the sides.

As this road extended through a level, improved section of the country, very little change was made in its grade.

Detailed statement of the cost of Main road, town of Hammonton, county of Atlantic. Total length, 9,283 feet, or 1.758 miles.

Kind of pavement, gravel.
Width of paved way, 20 feet.
Length of paved way, 9,283 feet.
Depth, 8 inches in center, 6 inches at sides.
Width between slopes or curbs, 30 feet.

Gravel, 4,011 cubic yards, at 90 cents; total,	\$3,609 90
Earth excavation, 2,069 cubic yards, at 40 cents; total,	827 60
Under drain, type porous tile, 500 lineal feet, at 20 cents; total, ..	100 00
Syphon drain, complete,	200 00
Extra material for embankment, 417 cubic yards, at \$1.00; total, ..	417 00
	<hr/>
	\$5,154 50
Less difference between items and lump sums,	50
	<hr/>
	\$5,154 00
Less amount for work not done,	160 00
	<hr/>
	\$4,994 00
Inspection,	174 00
Engineering,	257 70
	<hr/>
Total cost of road,	\$5,425 70
	<hr/>
Lump sum, contract price,	\$5,154 00
Amount allowed by State,	5,425 70
	<hr/>
	\$2,170 28
Forty per cent. of above, State's share,	
Less credit by cost of inspection already paid by State,	174 00
	<hr/>
Amount due by State,	\$1,996 28

COMMISSIONER OF PUBLIC ROADS.

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Maximum grade before,2. per cent.
 Maximum grade after,1.86 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

E. D. RIGHTMIRE,
Engineer.
 EDWARD L. TITUS,
Inspector.

BERGEN COUNTY.

Franklin Turnpike, Second Section, .857 Mile Long.

This improvement begins at the end of the macadam improved by Hohokus township and extends southerly, through Ramsey, to the north line of the borough of Allendale. It is graded to a width of thirty feet and paved for a width of sixteen feet. The pavement consists of a cold-mixed bituminous concrete laid upon a macadam base, the total depth of the pavement being seven inches.

This, in connection with the third section, built last year, completes the improvement of the old Franklin turnpike to the north line of Hohokus borough. This section also was built over a heavy glacial drift composed of materials varying in size from sand to boulders containing several cubic yards. Owing to the unstable nature of the soil it was necessary to construct hundreds of feet of concrete walls and thousands of feet of underdrain to take care of the many springs and the large quantity of underground water encountered in the prosecution of the work. A great deal of grading was required in order to bring the maximum grade down to five per cent., this grade being the maximum deemed safe for bituminous pavement.

Detailed statement of the cost of the Franklin turnpike, second section, from the improved portion to the north line of the borough of Allendale, county of Bergen. Total length, 4,529.30 feet, or 0.857 miles.

Width of stone-bed, 16 feet.
 Length of stone-bed, 4,529.30 feet.
 Depth of stone-bed, 7 inches.

Type H, 9,246 square yards, at \$1.59; total,	\$14,701 14
Earth Excavation, 6,189 cubic yards, at 50 cents; total,	3,094 50
Drain, 4-inch tile, 5,056 lineal feet, at 35 cents; total,	1,769 60
Cobble stone gutter, 717 square yards, at 90 cents; total,	645 30
9-inch pipe drain, 108 lineal feet, at 95 cents; total,	102 60
12-inch pipe drain, 128 lineal feet, at \$1.05; total,	134 40
15-inch pipe drain, 40 lineal feet, at \$1.15; total,	46 00
Catch basins, 3, at \$35.00; total,	105 00
Small catch basins, 1, at \$15.00; total,	15 00
Rubble masonry, 8 cubic yards, at \$6.00; total,	48 00

Total, \$20,661 54

TWENTIETH ANNUAL REPORT

Inspection,	\$297 00
Engineering,	1,042 00
Extras, paid by county,	117 00
Total cost of road,	<hr/> \$22,117 54
Lump sum, contract price,	\$18,392 18
Total allowed by the State,	20,661 54
One-third of above amount paid by the State,	6,887 18
Maximum grade before,	7.26 per cent.
Maximum grade after,	4.90 per cent.

RALPH D. EARLE, JR.,
Engineer.
 HENRY C. VAN BUSKIRK,
Inspector.

Essex Street, 1.604 Miles Long.

This improvement begins at Terrace avenue, Hackensack, and extends northwesterly to the Saddle river. This improvement, in connection with that being made this year, will give the people of Bergen and Passaic counties a direct improved road from Fort Lee to Paterson and thence to Northern New Jersey. It thus becomes not only a county but a State road, adding much to the comfort and convenience of all of those seeking ingress or egress from northern New Jersey to New York City.

Owing to the fact that a portion of this improvement was in front of properties which had already been graded and curbed, it was impossible to reduce the grade as much as it should have been. The width of the roadway as graded is forty feet, that of the pavement sixteen feet. This pavement consists of a cold-mixed asphaltic concrete laid upon a macadam base. The total depth of the pavement is seven inches.

Detailed statement of the cost of Essex street, from Terrace avenue, Hackensack to the Saddle river, county of Bergen. Total length, 8,470 feet, or 1.604 miles.

Width of stone-bed, 16 feet.
 Length of stone-bed, 8,470 feet.
 Depth of stone-bed, 7 inches.

Macadam, {	Base, 15,454 square yards, at 35 cents; total,	\$5,408 90
	Type H, 15,454 square yards, at \$1.05; total,	16,226 70
	Earth excavation, 9,189 cubic yards, at 50 cents; total,	4,594 50
	Rock excavation, 3,907 cubic yards, at \$1.50; total,	5,860 50
	Drain, 4-inch tile, 400 lineal feet, at 30 cents; total,	120 00
	Belgian block gutter, 1,412 square yards, at \$1.50; total,	2,118 00
	18-inch T. C. pipe, 106 lineal feet, at \$1.00; total,	106 00
	12-inch T. C. pipe, 50 lineal feet, at 70 cents; total,	35 00
	Catch basins, four (4), at \$30.00; total,	120 00
	Blind drain, 1,675 lineal feet, at 60 cents; total,	1,005 00
	8-inch T. C. pipe drain, 416 lineal feet, at 60 cents; total,	249 60
	8-inch cast iron pipe, 24 lineal feet, at \$1.00; total,	24 00

COMMISSIONER OF PUBLIC ROADS.

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Open ditch, 400 lineal feet, at 20 cents; total,	\$80 00
Sand, 60 cubic yards, at \$3.00; total,	180 00
Total,	\$36,128 20
Inspection,	432 00
Engineering,	2,263 00
Total cost of road,	\$38,823 20
Lump sum, contract price,	\$34,334 00
Total allowed by the State,	36,128 20
One-third of above amount paid by the State,	12,042 73
Maximum grade before,	8.86 per cent.
Maximum grade after,	8.86 per cent.

RALPH D. EARLE, JR.,
Engineer.
 HENRY C. VAN BUSKIRK,
Inspector.

Riverside Avenue, 2.275 Miles Long.

This road begins at Union avenue, in Rutherford, and extends along the easterly side of the Passaic river to Avondale bridge. This furnishes the people of Bergen county, and their neighbors in Essex and Passaic counties, an improved highway through what it is hoped soon will be a beautiful section of the State, after the Passaic river shall have been relieved of the immense volume of sewage which now contaminates it.

The road was graded to a width of thirty feet and paved to a width of sixteen feet and a depth of seven inches. This pavement consisted of a hot-mixed bituminous concrete laid upon a macadam base.

Detailed statement of the cost of Riverside avenue, Morris avenue, Rutherford to Avondale bridge, township of Union and borough of Rutherford, county of Bergen. Total length, 12,014.24 feet, or 2.275 miles.

Kind of pavement, Type G and B.
 Width of paved way, 16 feet.
 Length of paved way, 12,014.24 feet.
 Depth, 7 inches.
 Width between slopes or curbs, 30 feet.

Foundation, type "C" macadam,	} 22,856 sq. yds., at \$1.58; total,....	\$36,112 48
Surface, type "C" hot mixed,		
Surface, type "B", 140 square yards, at 50 cents; total,		70 00
Earth excavation, 7,229 cubic yards, at 57 cents; total,		4,120 53
Under drain, type French, 3,874 lineal feet, at 79 cents; total,		3,060 46
24-inch pipe (tile), 1,592 lineal feet, at \$1.50; total,		2,388 00
12-inch pipe (tile), 436 lineal feet, at \$1.00; total,		436 00
Receiving basins, 12, at \$112.00; total,		1,344 00
Receiving basins, open throat, 14, at \$162.50; total,		2,275 00
Receiving basins, small, 5, at \$45.00; total,		225 00
		\$50,031 47

TWENTIETH ANNUAL REPORT

Inspection,	\$453 66
Engineering,	2,399 00
	<hr/>
Extras paid by county,	\$52,884 13
	1,072 44
	<hr/>
Total cost of road,	\$53,956 57
	<hr/>
Lump sum, contract price,	\$44,156 72
Amount allowed by State,	52,884 13
	<hr/>
Forty per cent. of above, State's share,	\$21,153 65
Less credit by cost of inspection already paid by State,	453 66
	<hr/>
Amount due by State,	\$20,699 99

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

RALPH D. EARLE, JR.,
Engineer.
 JOSEPH H. McCABE,
Inspector.

Sylvan Avenue, Southern Section (Alpine), .487 Mile Long.

This improvement was begun in 1911, and is a portion of the improved road which is being constructed along the top of the Palisades. This section begins at the north line of the borough of Tenaflly and extends north to southern line of the macadam pavement already constructed. The road was graded to a width of thirty-two feet, and macadam with an asphalt binder was laid to a width of fourteen feet and a thickness of five inches.

Owing to the fact that nearly all of the excavation necessary in improving this road was through trap rock, the road was not completed until this year.

Detailed statement of the cost of Sylvan avenue, southern section (Alpine), borough of Alpine, county of Bergen. Total length, 2,570.17 feet, or .487 miles.

Kind of pavement, macadam with asphaltum binder.
 Width of paved way, 14 feet.
 Length of paved way, 2,570.17 feet.
 Depth, 5 inches.

Macadam with asphaltum binder, 4,010.22 square yards, at 75 cents; total,	\$3,007 67
Earth excavation, 3,111.15 cubic yards, at \$1.22; total,	3,795 60
Rock excavation, 506.65 cubic yards, at \$2.50; total,	1,266 63
Ditching in rock, 40 cubic yards, at \$2.50; total,	100 00
	<hr/>
	\$8,169 90
Inspection,	483 00
Engineering,	863 00
Extras paid entirely by borough,	96 00
	<hr/>
Total cost of road,	\$9,611 90
	<hr/>
Lump sum, contract price,	\$7,144 20

COMMISSIONER OF PUBLIC ROADS.

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Amount allowed by State,	\$8,169 90
One third of above, State's share,	2,723 30
Maximum grade before,12.	per cent.
Maximum grade after, .....6.125	per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

WALTER G. CLARK,
Engineer.
JOHN H. LINDEMANN,
Inspector.

Franklin Turnpike, First Section, 1.808 Miles Long.

This road begins at the New York State line, near Suffern, and extends southerly to the section improved by Hohokus township. There was a slight change of line made at the northern end in order to carry the road away from the main line of the Erie Railroad.

Owing to the rolling nature of the country many very important changes in grades were made. The road is graded to a width of thirty feet and further improved with a cold-mixed bituminous pavement sixteen feet wide. This pavement is laid upon a macadam base. The total thickness is seven inches.

Owing to the loose and gravelly nature of the soil it was necessary to construct concrete retaining walls along several sections, also to lay many yards of cobble gutters.

The great value of this road, beyond the advantage it offers to the residents along its line, is that it forms a portion of the through route to New York State.

Detailed statement of the cost of the Franklin turnpike, first section, township of Hohokus, county of Bergen. Total length, 9,548.0 feet, or 1.808 miles.

Width of stone-bed, 16 feet.

Length of stone-bed, 9,548.0 feet.

Depth of stone-bed, 7 inches.

Type H, 18,147 square yards, at \$1.59; total,	\$28,853 73
Unclassified excavation, 12,108 cubic yards, at 50 cents; total,....	6,099.00
4-inch underdrain, 4,710 lineal feet, at 35 cents; total,	1,648 50
French drain, large, 4,100 lineal feet, at \$1.25; total,	5,125 00
8-inch T. C. drain, 200 lineal feet, at 75 cents; total,	150 00
Cobble stone gutter, 1,823 square yards, at 90 cents; total,	1,640 70
Concrete wall, 107 cubic yards, at \$8.65; total,	925 55

Total,	\$44,442 48
Inspection,	528 00
Engineering,	2,943 00
Extras, paid by county,	10,386 35

Total cost of road, \$58,299 83

Lump sum, contract price, \$35,744.45 and \$2,540.00, \$38,284 45

TWENTIETH ANNUAL REPORT

Total allowed by the State,	\$44,442 48
One third of above, amount paid by the State,	14,814 16
Maximum grade before,	7.07 per cent.
Maximum grade after,	4.81 per cent.

RALPH D. EARLE, JR.,
Engineer.
HENRY C. VAN BUSKIRK,
Inspector.

Saddle River—Broadway Road, .209 Mile Long.

This improvement is literally a connecting link completing the improvement of the highway from Hackensack to Paterson by way of Arcola. The completion of this work finishes an improved highway from the county seat of Bergen county to the county seat of Passaic county.

The roadway was graded to a width of thirty feet and was macadamized for a width of sixteen feet and to a depth of six inches. Owing to the location and length of the road little or no change was made in its alignment or grade.

Detailed statement of the cost of the Saddle River-Broadway road, township of Saddle River, county of Bergen. Total length, 1,101.96 feet, or 0.209 miles.

Kind of pavement, macadam.
Width of paved way, 16 and 23 feet.
Length of paved way, 1,101.96 feet.
Depth, 6 inches.
Width between curbs, 30 feet.

Foundation, type C, 2,266.4 square yards, at 40 cents; total,	\$906 56
Surface, type A, 2,266.4 square yards, at 40 cents; total,	906 56
Surface, type A, outside road, 93 square yards, at 45 cents; total,	41 85
Earth excavation, 1,269 cubic yards, at 40 cents; total,	507 60
Drain, type 18-inch vitrified pipe, 117 lineal feet, at \$1.00; total, ..	117 00
3 concrete and cast iron inlets, at \$30.00; total,	90 00
2 concrete headwalls, at \$15.00; total,	30 00
	<hr/>
Engineering,	\$2,599 57
	197 36
	<hr/>
Extras paid entirely by township,	\$2,796 93
	100 00
	<hr/>
Total cost of road,	\$2,896 93
	<hr/>
Lump sum, contract price,	\$2,347 25
Amount allowed by State,	2,796 93
Forty per cent. of above, State's share,	1,118 77
Amount due by State,	1,118 77

COMMISSIONER OF PUBLIC ROADS.

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Maximum grade before, 4.6 per cent.
 Maximum grade after, 4.6 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

LEMUEL LOZIER,
Engineer.
 WM. H. CADMUS,
Inspector.

Sylvan Avenue or Boulevard, Tenafly, 1.536 Miles Long.

This improvement begins at the end of the Alpine section at the borough line of Tenafly and extends throughout the entire length of this borough, ending at its southerly line, thus practically completing an improved highway from Edgewater to Norwood, the most northerly borough of Bergen county.

The grading was carried to a width of thirty-two feet, and a macadam pavement fourteen feet wide and five inches thick was laid through the center. The macadam pavement was treated by applying a coat of heavy asphalt oil the better to enable it to withstand the heavy through motor traffic to which this road is subjected.

Owing to the very wet nature of the soil, it was necessary to lay many hundred feet of underdrain to preserve the road.

Detailed statement of the cost of Sylvan avenue (or boulevard), borough of Tenafly, county of Bergen. Total length, 8,110.08 feet, or 1.536 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 8,110.08 feet.

Depth of stone-bed, 5 inches.

Macadam, with asphaltum binder, 12,806.78 square yards, at about

57 cents, total,	\$7,299 76
Telford foundation, 70 square yards, at 67 cents; total,	46 90
Excavation, 8,962.42 cubic yards, at \$1.00; total,	8,962 42
Extra excavation, 484.72 cubic yards, at \$1.25; total,	605 90
Drain, 3,700.00 lineal feet, at 50 cents; total,	1,850 00
Extra excavation, 1,611.40 cubic yards, at \$1.25; total,	2,014 25

Total,	\$20,779 23
Inspection,	1,367 71
Engineering	1,649 30
Extras, paid by borough, 2 culverts, at \$60.00; total,	120 00

Total cost of road,	\$23,916 24
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Lump sum, contract price,	\$17,724 68
Total allowed by the State,	20,779 23
One-third of above, amount paid by the State,	6,926 41

Maximum grade before,	13 per cent.
Maximum grade after,	7 per cent.

WATSON G. CLARK,
Engineer.
 JOHN STANLEY,
Inspector.

TWENTIETH ANNUAL REPORT

BURLINGTON COUNTY.

Hartford—Fairview Road, 1.093 Miles Long.

The section of this road improved at the present time begins at the Page road and extends southeasterly to the Mt. Laurel township line. This road, like all the others improved this year in Burlington county, are paid for by the townships through which they pass. This is due to the unfortunate financial condition of the county. These improvements, therefore, have to be carried on, as it were, in a piecemeal manner. This road is the first piece built to connect the Mt. Holly—Morroestown turnpike with the Westfield and Camden turnpike. It runs through a rich farming country and will be of much more than local value, when completed, to Fairview.

The width of the roadway as graded is twenty-eight feet; the pavement consists of plain macadam, fourteen feet wide and six inches deep. As the road runs through a comparatively level country there were no great changes in the grade.

Detailed statement of the cost of the Hartford-Fairview road, township of Chester, county of Burlington. Total length, 5,774 feet, or 1.093 miles.

Kind of pavement, water-bound macadam.

Width of paved way, 14 feet.

Length of paved way, 5,774 feet.

Depth, 6 inches.

Width, between slopes or curbs, 28 feet.

Foundation, type C, 8,982 square yards, at 35 cents; total,	\$3,143 70
Surface, type A, 8,982 square yards, at 40 cents; total,	3,592 80
Cross roads and driveways, type A, 300 square yards, at 50 cents; total,	150 00
Earth excavation, 2,505 cubic yards, at 35 cents; total,	876 75
Extra embankment in place, 1,000 cubic yards, at 45 cents; total,	450 00
Under drain, type 4-inch tile, 235 lineal feet, at 15 cents; total,	35 25
Under drain, type 4-inch tile, 765 lineal feet, at 15 cents; total,	114 75
	<hr/>
	\$8,363 25
Less for 4-inch drain not laid, 765 feet, at 15 cents; total,	114 75
	<hr/>
	\$8,248 50
Inspection,	186 88
Engineering,	418 16
	<hr/>
Total cost of road,	\$8,853 54
	<hr/>
Lump sum, contract price,	\$8,363 25
Amount allowed by State,	8,853 54
	<hr/>
Forty per cent. of above, State's share,	\$3,541 42
Less credit by cost of inspection already paid by State,	186 88
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Amount due by State,	\$3,354 54
Maximum grade before,	1.7 per cent.
Maximum grade after,	1.2 per cent.

COMMISSIONER OF PUBLIC ROADS.

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We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

EARL THOMPSON,
Engineer.
EMERSON P. GOWDY,
Inspector.

New Egypt—Jacobstown and Chesterfield Road, 4.09 Miles Long.

This road forms an outlet from New Egypt toward Borden-town and Trenton, and when the short section in Chesterfield township is completed, will give the inhabitants of the capital a new outlet to the shore by way of Egypt. This improvement begins at the Ocean county line and extends westerly to Jacobstown, thence northwesterly to the Chesterfield township line. The graded width is thirty-three feet except through Jacobstown. The gravel surface is sixteen feet wide and varies in depth from eight inches in the center to four inches on the sides. The alignment of this road was, with few exceptions, which have been improved, very good, but a great deal of grading was required to bring this road up to its highest point of usefulness. The decrease in the maximum grade is shown in the detailed statement below.

Detailed statement of the cost of the New Egypt, Jacobstown, Chesterfield road, township of North Hanover, county of Burlington. Total length, 21,598 feet, or 4.091 miles.

Kind of pavement, gravel.
Width of paved way, 16 feet.
Length of paved way, 21,598 feet.
Depth, 8 inches in center, 4 inches at sides.
Width, between slopes or curbs, 33 feet.

Foundation, type gravel B, 3,301.8 cubic yards, at \$1.20; total, ..	\$3,962 16
Surface, type gravel Local A, 3,301.8 cubic yards, at \$1.40; total, ..	4,622 52
Earth excavation, 26,761 cubic yards, at 30 cents; total,	8,028 30
Grubbing, 2 acres, at \$100.00 per acre; total,	200 00
Stone block gutters, 15 square yards, at \$3.00; total,	45 00
	<hr/>
	\$16,857 98
Less for gutters not laid,	45 00
	<hr/>
	\$16,812 98
Inspection,	402 92
Engineering,	840 65
	<hr/>
	\$18,056 55
Extras paid entirely by township,	64 86
	<hr/>
Total cost of road,	\$18,121 41
	<hr/>
Lump sum, contract price,	\$16,857 98
Amount allowed by State,	18,056 55
	<hr/>
Forty per cent. of above, State's share,	\$7,222 62

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Less credit by cost of inspection already paid by State,	\$402 92
Amount due by State,	\$6,819 70
Maximum grade before,	6½ per cent.
Maximum grade after,	4½ per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

EARL THOMSON,
Engineer.
JOHN T. CARR,
Inspector.

Cookstown—New Egypt Road, 1.373 Miles Long.

The improvement of this highway begins at the iron bridge in Cookstown and extends northeasterly toward New Egypt, ending at the Ocean county line. The roadway is graded to a width of thirty-three feet and is covered with gravel for a width of sixteen feet, the latter varying in depth from eight inches in the center to four inches on the sides. This improvement is a part of the through east and west line from Camden to Lakewood and the seashore.

Detailed statement of the cost of the Cookstown and New Egypt road, township of North Hanover, county of Burlington. Total length, 7,251.3 feet, or 1.373 miles.

Kind of pavement, gravel.
Width of paved way, 16 feet.
Length of paved way, 7,251.3 feet.
Depth, 8 inches in center, 4 inches at sides.
Width between slopes or curves, 33 feet.

Foundation, type I gravel B, 1,094.15 cubic yards, at \$1.75; total,	\$1,914 76
Surface, type I gravel A, 1,094.15 cubic yards, at \$2.70; total,	2,954 20
Earth excavation, 10,400 cubic yards, at 30 cents; total,	3,120 00
Under drain, type 4-inch tile, 3,000 lineal feet, at 25 cents; total,	750 00
Grubbing ½ acre, at \$100.00,	50 00
	<hr/>
	\$8,788 96
Less difference between amount and lump sum bid,	10 76
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	\$8,778 20
Inspection,	128 13
Engineering,	439 45
	<hr/>
	\$9,345 78
Extras paid for by county,	66 86
	<hr/>
Total cost of road,	\$9,412 64
	<hr/>
Lump sum, contract price,	\$8,028 20

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Amount allowed by State,	\$9,345 78
Forty per cent. of above, State's share,	\$3,738 31
Less credit by cost of inspection already paid by State,	128 13
Amount due by State,	\$3,610 18
Maximum grade before,	5 per cent.
Maximum grade after,	1 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

EARL THOMSON,
Engineer.
JOHN T. CARR,
Inspector.

Detailed statement of the cost of the reinforced concrete slab bridge on Cookstown and New Egypt road, township of New and North Hanover, county of Burlington. Total length, 34.4 feet.

Kind of pavement, gravel.
Width of paved way, 34 feet.
Foundation on rock.

Total cost of bridge,	\$4,000 00
Amount allowed by State,	4,000 00
Twenty per cent. of above, State's share,	800 00

We hereby certify that the above bridge is finished in all respects in strict compliance with the plans and specifications.

JAMES LOGAN,
Engineer.
WM. MILLER,
Inspector.

**Lewistown—Wrightstown—Cookstown Road, 5.941 Miles Long, and
Extension Through Railroad Property, .181 Mile Long.**

This road, which begins at the center of the Juliustown road, in Lewistown, extends through Wrightstown to the iron bridge in Cookstown. It completes the series of improved roads which the townships of Burlington county have been constructing for the past two years to connect its old improved roads with those of Ocean county. The completion of this improvement furnishes the residents of Camden and adjacent country with a direct outlet over improved roads to Lakewood and the seashore.

The width of the graded roadway is thirty-three feet, while that of the gravel surface is sixteen feet, the depth of the latter varying from eight inches in the center to four inches on the sides.

The through travel above referred to is carried over a cut-off in Wrightstown, thereby avoiding two grade crossings; thus everything has been done for the comfort and safety of the traveling public.

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Detailed statement of the cost of the Lewistown-Wrightstown-Cookstown road, township of New Hanover, county of Burlington. Total length, 31,368 feet, or 5.941 miles.

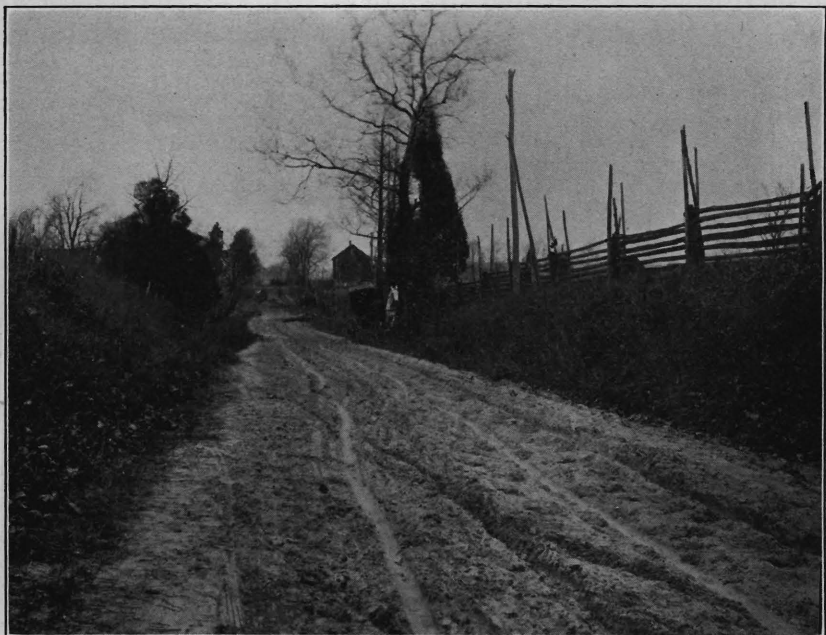
Kind of pavement, gravel.	
Width of paved way, 16 feet.	
Length of paved way, 31,368 feet.	
Depth, 8 inches in centre, 4 inches at sides.	
Width between slopes or curbs, 33 feet.	
Foundation, type local gravel A, 4,694 cubic yards, at \$1.60; total,	\$7,510 40
Surface, type local gravel A, 4,694 cubic yards, at \$1.60; total,....	7,510 40
Earth excavation in road, 40,455 cubic yards, at 35 cents; total, ..	14,159 25
Earth excavation outside road, 672 cubic yards, at 40 cents; total,	268 80
Grubbing, 2½ acres, at \$100.00,	250 00
Total,	\$29,698 85
Inspection,	941 01
Engineering,	1,484 94
Total,	\$32,124 80
Extras paid entirely by township,	159 74
Total cost of road,	\$32,284 54
Lump sum, contract price,	29,698 85
Amount allowed by State,	32,124 80
Forty per cent. of above, State's share,	\$12,849 92
Less credit by cost of inspection already paid by State,	941 01
Amount due by State,	\$11,908 91
Maximum grade before,	5 per cent.
Maximum grade after,	2.8 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

EARL THOMSON,
Engineer.
WILLIAM MILLER,
Inspector.

Detailed statement of the cost of the Lewistown-Wrightstown-Cookstown road, Wrightstown Cut-off, township of New Hanover, county of Burlington.

Total length, 960 feet, or 0.181 miles.	
Kind of pavement, gravel.	
Width of paved way, 16 feet.	
Length of paved way, 960 feet.	
Depth, 8 inches in centre, 4 inches at sides.	
Width, between slopes or curbs, 33 feet.	
Foundation, type I, gravel A, 127 cubic yards, at \$1.60; total, ...	\$203 20
Surface, type I, gravel A, 127 cubic yards, at \$1.60; total,	203 20
Earth excavation, 85 cubic yards, at 40 cents; total,	34 00
Extra embankment in plan, 600 cubic yards, at 48 cents; total, ...	288 00
	\$728 40
Engineering,	36 42
Total cost of road,	\$764 82



Pemberton and Vincentown Road, Burlington County, Before Improvement.



Pemberton and Vincentown Road, Burlington County, After Improvement.

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Lump sum, contract price,	\$728 45
Amount allowed by State,	764 82
Forty per cent of above, State's share,	305 93
Amount due by State,	305 93
Maximum grade before,	1.5 per cent.
Maximum grade after, .....	.5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

EARL THOMSON,
Engineer.
WILLIAM MILLER,
Inspector.

Pemberton and Vincentown Road, 1.565 Miles Long.

This road begins at the Pemberton borough line and extends through Pemberton township to the Southampton township line. Owing to the fact of its being constructed by Pemberton township it was impossible to carry it through to Vincentown, thus a great portion of the value of this road is, for the time being, lost, as at present it simply forms an inlet and outlet for the farmers along its line to Pemberton and the railroad. As the road extends through a level country it was not necessary to make any great changes in its grade.

The width of the roadway as graded is twenty-eight feet; that of the gravel twelve feet, and its depth four inches.

Detailed statement of the cost of the Pemberton-Vincentown road, township of Pemberton, county of Burlington.

Total length, 8,263 feet, or 1.565 miles.
Kind of pavement, gravel.
Width of gravel, 12 feet.
Length of gravel, 8,263 feet.
Depth, 4 inches.
Width between slopes, 28 feet.

Grubbing, 0.5 acre, at \$100; total,	\$50 00
Gravel, 1224.0 cubic yards, at \$2.70; total,	3,304 80
Earth excavation, 4590.0 cubic yards, at 30 cents; total,	1,377 00
Extra mat. for embankment, 913.0 cubic yards at 30 cents; total,	273 90
Under drain, type, tile, 1,740 lineal feet, at 18 cents; total,	313 20
Extra under drain, type, tile, 200 lineal feet, at 18 cents; total, ..	36 00
	<hr/>
	\$5,354 90
Less for 200 feet under drain not ordered,	36 00
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	\$5,318 90
Less for difference between amount by items and by contract, ...	136 20
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	\$5,182 70
Inspection,	168 67
Engineering,	334 76
	<hr/>
	\$5,686 13
Extras paid entirely by township,	36 00
	<hr/>
Total cost of road,	\$5,722 13

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Lump sum, contract price,	\$5,182 70
Amount allowed by State,	5,686 13
Forty per cent. of above, State's share,	\$2,274 45
Less credit by cost of inspection already paid by State,	168 67
Amount due by State,	\$2,105 78
Maximum grade before,	5.25 per cent.
Maximum grade after,	2.35 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

WINFIELD H. ELDRIDGE,
Engineer.
H. R. LIPPINCOTT,
Inspector.

CAMDEN COUNTY.

Camden and Westfield Turnpike, 3.85 Miles Long.

The improvement of this old turnpike under this contract begins at Thirty-seventh street, in the city of Camden, and extends northeasterly to the Burlington county line.

Like nearly all the old turnpikes the alignment of this road was so good that there was no necessity for changing it. The graded width is twenty-eight feet, while the asphalt concrete pavement is twelve feet wide, in addition to which a macadam shoulder three feet in width was laid on each side, thus making the paved width of the road eighteen feet. This work was rather the re-paving of an old contract than the construction of a new road. The thickness of the bituminous concrete is three inches.

By the completion of this work we have a smooth, hard road from the Burlington city line to the Camden city line. It is earnestly hoped that the completion of this improvement will induce the two cities just mentioned to improve their streets so that they will at least compare favorably with this country improvement, something which at present they fail to do.

Detailed statement of the cost of the Camden and Westfield Turnpike road, township of Pensauken and city of Camden, county of Camden.

- Total length, 20326.6 feet, or 3.850 miles.
- Width of stone-bed, 18 feet.
- Length of stone-bed, 20,287 feet, exclusive of railroad crossings.
- Depth of stone-bed, 6 inches on wings, 10 inches in centre, including old Telford base of about 7 inches.
- Width of gravel shoulders, each, 5 feet.
- Width of type H centre, 12 feet.
- Width of macadam shoulders, gravel bound, each, 3 feet.

COMMISSIONER OF PUBLIC ROADS.

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1½-inch stone on shoulders and depressions, 3624.02 tons, at \$2.64 per ton; totals,	\$9,567 41
Type H top on old telford, 4776.95 tons, at \$5.74 per ton; total,	27,419 69
Gravel, 3,465 cubic yards, at 90 cents; total,	3,118 50
Total,	\$40,105 60
Inspection,	496 50
Engineering,	1,000 00
Extras, paid by county, in city to fill out to trolley track,	1,434 00
Total cost of road,	\$43,036 50
Lump sum, contract price,	36,158 88
Total allowed by the State,	39,758 88
One-third of above amount paid by the State,	13,252 96
Maximum grade before,	5.6 per cent.
Maximum grade after,	5 per cent.

J. J. ALBERTSON,
County Engineer.
HARRY E. HORNER,
Inspector.

Gibbsboro and Berlin Road, 2.924 Miles Long.

This road begins at the end of a bituminous concrete road in Gibbsboro and extends in a southeasterly direction to the White Horse pike at Berlin. It is graded for a width of twenty-eight feet, and gravelled twenty-four feet wide, the gravel being eight inches deep in the center and six inches deep at the sides.

The completion of this improvement gives us a continuous improved highway from Camden, through Haddonfield, to Berlin. In addition to its local value to the residents along its line it relieves the White Horse pike of a portion of its very heavy traffic, thus carrying out the policy of the department of relieving the heavier traveled roads of a portion of their burden, thereby reducing the cost of their maintenance.

Detailed statement of the cost of the Gibbsboro and Berlin gravel road, townships of Voorhees and Berlin, county of Camden.

Total length, 15440.7 feet, or 2.924 miles.
Width of gravel-bed, 24 feet.
Length of gravel-bed, 15440.7 feet.
Depth of gravel-bed, 8 inches in centre, 6 inches at sides.

Gravel, 7,900 cubic yards, at 60 cents; total,	\$4,740 00
Earth excavation, 12,194 cubic yards, at 30 cents; total,	3,658 20
Extra vitrified brick gutters, 659.54 square yards, at \$1.50; total,	989 31
Extra second-hand block, carted and paved, 256 square yards, at 75 cents; total,	192 00
Brick gutters, 533⅓ square yards, at \$1.25; total,	666 66
Total,	\$10,246 17

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Inspection,	\$690. 00
Engineering,	500 00
Extras, paid by county,	63 78
Total cost of road,	\$11,499 95
Lump sum, contract price,	9,308 70
Total allowed by State,	10,246 17
One-third of above amount paid by the State,	3,415 39
Maximum grade before,	6.22 per cent.
Maximum grade after,	4 per cent.

J. J. ALBERTSON,
Engineer.
 CHARLES SNYDER,
Inspector.

CAPE MAY COUNTY.

Seashore Road, Third Section, 6.589 Miles Long.

This work marks the completion of the main seashore road from Cape May to Beasley's Point, giving the county an improved highway from north to south, being the entire length of the Ocean highway in Cape May county. This, like the Shore road in Atlantic county, now only awaits the construction of a bridge across the Great Egg Harbor to complete the Ocean highway from its extreme southern end to Toms River. Recognizing its future importance, the board of chosen freeholders of Cape May county decided to grade the roadway to a width of thirty-five feet, upon which was laid a coat of gravel twenty feet wide and varying in depth from eight inches in the center to five inches on either side.

There were two very bad turns on this road which the Board also eliminated by acquiring a right of way and carrying the improvement on a much more direct line than that followed by the old road.

Owing to the level nature of the country there was little change in the maximum grade.

Detailed statement of the cost of the Seashore road, third section, township of Upper, county of Cape May.

Total length, 34,790 feet, or 6.589 miles.	
Width of gravel-bed, 20 feet.	
Length of gravel-bed, 34,790 feet.	
Depth of gravel-bed, 8 inches in center, 5 inches at sides.	
Gravel, 13,960 cubic yards, at \$1.29; total,	\$18,008 40
Earth excavation, 26,758 cubic yards, at 24½ cents; total,	6,555 71
Grubbing, 2½ acres, at \$75.00; total,	187 50
Total,	\$24,751 61
Inspection,	691 00
Engineering,	1,113 82
Extras, paid by county,	1,150 00
Total cost of road,	\$27,706 43

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Lump sum, contract price,	\$24,751 61
Total allowed by the State,	24,751 61
One-third of above amount paid by the State,	8,250 54

Maximum grade before,	3 per cent.
Maximum grade after,	2 per cent.

L. M. RICE,

Engineer.

CHARLES B. THOMPSON

*Inspector.***Woodbine—Tuckahoe Road, First Section, 4.208 Miles Long.**

The improvement of this road begins at Bryant street, in Woodbine, and extends northerly through Steelmantown to Marshallville. It gives the people of Woodbine and the surrounding country an outlet to the Tuckahoe river and to the improved roads running northerly and easterly from Tuckahoe. The road was graded thirty-five feet wide, and paved with gravel for a width of twenty feet and to a depth of eight inches in the center and five inches on the sides. A very great improvement was made at a point about one mile south of Marshallville, where two sharp angles and a narrow causeway over a cranberry bog dam were eliminated, thus converting what was a mere back-country road into a straight and smooth highway. Owing to the very level nature of the country very little change in grade was made, though some low swampy sections were elevated above the surrounding country, thereby insuring a road that is convenient for travel at all seasons of the year.

Detailed statement of the cost of the Woodbine-Tuckahoe road, first section, township of Upper, county of Cape May.

Total length, 22,218 feet, or 4.208 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 22,218 feet.

Depth of gravel-bed, 8 inches in center, 5 inches at sides.

Gravel, 8,915 cubic yards, at 80 cents; total,	\$7,132 00
Earth excavation, 12,475 cubic yards, at 23 cents; total,	2,869 25
Extra embankment, 12,000 cubic yards, at 27 cents; total,	3,240 00
Grubbing, 15 acres, at \$49.00,	735 00
Supplemental contract, gravelling and sodding embankment,	300 00

Total,	\$14,276 25
Inspection,	504 00
Engineering expenses,	642 43

Total cost of road,	\$15,422 68
Lump sum, contract price,	13,976 25
Total allowed by the State,	14,276 25
One-third of above amount paid by the State,	4,758 75

Maximum grade before,2.3 per cent.
 Maximum grade after,0.4 per cent.

L. M. RICE,
Engineer.
 L. S. STILLWELL,
Inspector.

CUMBERLAND COUNTY.

Malaga Road, Second Section, 5.595 Miles Long.

The improvement of this road begins at Landis avenue, Vine-land, and extends southerly to Foundry street in the city of Millville. It was graded to a width of thirty feet, and covered with gravel for a width of twenty feet and a depth of eight inches in the center, decreasing to four inches on either side.

By the completion of this improvement the people of Millville and all of that section adjacent thereto have now an improved highway giving them an outlet to all of the improved roads lying north. Very little change was made in the alignment or grade owing to the very level nature of the country.

Detailed statement of the cost of the Malaga road, second section, townships of Landis and Millville, county of Cumberland.

Total length, 29,539 feet, or 5.595 miles.	
Kind of pavement, gravel.	
Width of paved way, 20 feet.	
Length of paved way, 29,539 feet.	
Depth, 8 inches in centre, 4 inches at sides.	
Width between slopes or curbs, 30 feet.	
Gravel, 11,033 cubic yards, at 67 cents; total,	\$7,392 11
Earth excavation, 17,300 cubic yards, at 30 cents; total,	5,190 00
Grubbing $5\frac{1}{2}$ acres, at \$50; total,	275 00
Extra work on driveways—	
{ 359 yards excavating, at 30 cents; total,	107 70
{ 187 yards gravelling, at 67 cents; total,	125 29
Extra work on High street, Millville, from Station 251—	
{ 729 cubic yards excavating, at 30 cents; total,	218 70
{ $\frac{1}{3}$ acre grubbing, at \$50,	16 67
Total,	\$13,325 47
Inspection,	187 18
Engineering,	666 27
	<hr/>
Extras paid by county,	\$14,178 92
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Total cost of road,	\$14,178 92

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Lump sum, contract price, \$12,957.11, less \$100 for drains not put in,	\$12,857 11
Amount allowed by State,	13,943 55
Forty per cent. of above, State's share,	5,577 42
Less credit by cost of inspection already paid by State,	187 18
Amount due by State,	5,390 24
Maximum grade before,	5.50 per cent.
Maximum grade after,	2.91 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

WALTER M. SHARP,
Engineer.
A. A. GRIBBIN,
Inspector.

Detailed statement of the cost of the Malaga road, second section, bridges and culverts, townships of Landis and Millville, county of Cumberland.

Contract of Craig & Richmond, Parvins branch bridge and culverts,	\$575 00
Contract of J. H. Robbins, Tarkiln branch bridge and culverts, ..	642 50
	<hr/>
	\$1,217 50
Engineering,	60 87
	<hr/>
Total cost of bridges and culverts,	\$1,278 37
Lump sum, contract price,	1,217 50
Amount allowed by State,	1,278 37
Twenty per cent. of above, State's share,	255 67
Amount due by State,	255 67

We hereby certify that the above work is finished in all respects in strict compliance with the plans and specifications.

WALTER M. SHARP,
Engineer.
A. A. GRIBBIN,
Inspector.

ESSEX COUNTY.

Normal Avenue, .755 Mile Long.

This road begins at Valley road in Montclair and runs past the new State Normal School and thence to the Cedar Grove reservoir on top of the first Watchung mountain. This improvement was begun in 1909, but owing to the heavy cuts through solid trap rock the work was not completed until October, 1912. An idea of the amount of work necessary to improve this road may be gleaned from the fact that the maximum depth of the cut was twenty-eight feet.

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This improvement connects three improved north and south roads; namely, the Valley road, the Great Notch road and the Ridge road, in which fact lies its chief value.

The width of the graded roadway is thirty feet; the width of the pavement is sixteen feet and its depth eight inches, the macadam surface being further improved by the application of a heavy asphaltum binder.

Detailed statement of the cost of Normal Avenue, township of Montclair and Cedar Grove, county of Essex. Total length, 3,985 feet, or .755 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 3,985 feet.
Depth, 8 inches.

Surface, type C, 7,070 square yards, at 65 cents; total,	\$4,595 50
Earth excavation, 9,728 cubic yards, at 35 cents; total,	3,404 80
Earth excavation, 2,047 cubic yards, at 45 cents; total,	921 15
Rock excavation, 30,051 cubic yards, at 90 cents; total,	27,045 90
Drain, 400 lineal feet, at 30 cents; total,	120 00
Gutter, cobble stone, 1,013 square yards, at 80 cents; total,	810 40

	\$36,897 75
Inspection	2,094 00
Engineering, approximately	1,844 00

Total cost of road,	\$40,835 75
Lump sum, contract price,	35,046 20
Amount allowed by State,	36,897 75
One-third of above amount paid by State	12,299 25

Maximum grade before	17.70 per cent.
Maximum grade after	8.00 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

FREDERICK A. REIMER,
County Engineer.

Old Short Hills Road, 2.6 Miles Long.

This improvement begins at the Northfield road in West Orange, and extends southerly to the Parsonage road in Millburn. Its completion forms an extension of the improved roads of Millburn northward along the top of the second mountain, and converts what was a rough, narrow, country road into a smooth, hard highway. An idea of the amount of work necessary to accomplish this end may be gained from the fact that nearly one-half of the cost of this improvement was for grading and drainage.

The width of the improved roadway is thirty feet; the width of the pavement sixteen feet and its depth eight inches. The macadam surface was treated with heavy asphaltum binder.

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Detailed statement of the cost of the Old Short Hills road, township of Milburn, county of Essex. Total length, 13,728 feet, or 2.600 miles.

Width of stone-bed, 16 feet.

Length of stone-bed, 10,578 feet.

Depth of stone-bed, 8 inches.

Telford, with asphaltum binder, 18,606 square yards, at 64 cents; total,	\$11,907 84
Telford, with asphaltum binder, re-surfaced, 5,799 square yards, at 40 cents; total,	2,319 60
Earth excavation, 24,831 cubic yards, at 45 cents; total	11,173 95
Drain, 1,095 lineal feet at 30 cents; total	328 50
Total	\$25,729 89
Inspection,	1,020 00
Engineering, (appr. \$1,286.00),	1,286 00
Extension to culvert at station 115, for drainage purposes,	580 00
Building culvert at South Orange Ave., for drainage purposes,	1365 00
Total cost of road,	\$28,751 89
Lump sum, contract price	\$25,894 70
One-third of \$25,729.89 paid by the State,	8,576 63
One-fifth of \$716.00 paid by the State, (Bridge Work)	143 20
Maximum grade before	9.20 per cent.
Maximum grade after	6.00 per cent.

FREDERICK A. REIMER,
Engineer.
 THOS. MARSHALL,
Supervisor.

GLOUCESTER COUNTY.

Mantua Grove and Mickleton Road, 3.503 Miles Long.

This improvement begins at the end of the present bituminous concrete pavement in front of the Mantua Grove schoolhouse and extends to a point south of Mickleton. The improvement consists of a roadway graded twenty-eight feet wide, upon which was laid a pavement of hot-mixed bituminous concrete sixteen feet wide and having, with its stone base, a total thickness of seven inches. That this improvement is appreciated is plainly indicated by the fact that many of the property owners in Mickleton paid the contractor to extend the pavement to the full width of the road in front of their properties. The change wrought by this improvement is probably one of the most marked in Gloucester county, and, owing to the fact that it passes through a very rich agricultural country, it is of great value to the farmers in getting their large loads of produce to market.

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When the Mickleton and Swedesboro road, now under construction, is completed there will be a continuous highway of bituminous concrete from the county seat at Woodbury to the Salem county line at Auburn.

The maximum grade was reduced from 4 per cent. to 3.4 per cent.

Detailed statement of the cost of the Mantua Grove and Mickleton road, township of West Deptford and East Greenwich, county of Gloucester. Total length, 18,500 feet, or 3.503 miles.

Kind of pavement, Type G-2.
Width of paved way, 16 feet.
Length of paved way, 18,500 feet.
Depth, 7 inches.

Foundation, type, macadam, surface, type G-2, 32,889 square yards, at \$1.17, total,	\$38,480 13
Earth excavation, 12,013 cubic yards, at 33 cents; total,	3,964 29
Under drain, type, tile, 2,540 lineal feet, at 25 cents; total,	635 00

Extras Ordered by County and Approved by State:

104 cubic yards excavation, at 33 cents,	\$34 32
4,797 cubic yards excavation, at 60 cents,	2,878 20
2,257 lineal feet tile drain, at 25 cents	564 25
267 sq. yards Telford foundation, at \$1.35, ..	360 45
3,066 square yards ballast, at 50 cents,	1,533 00
1,584 square yards asphalt concrete surface at 67 cents	1,061 28
	<hr/>
	\$6,431 60

Total	\$43,079 42
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Total cost of road by contract	\$49,510 92
Inspection	480 00
Engineering	960 00

Total cost of road	\$50,950 92
Lump sum, original contract price	43,079 42

Amount allowed by State,	\$49,510 92
One-third of above paid by State	16,503 64

Maximum grade before	4.4 per cent.
Maximum grade after	3.4 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

WM. C. CATTELL,
Engineer.
ROBERT ELDRIDGE,
Inspector.

COMMISSIONER OF PUBLIC ROADS.

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HUNTERDON COUNTY.

Clinton-Hampton Road, 5.227 Miles Long.

This improvement begins at the Clinton borough line and extends in a general northerly direction along the old Spruce Run turnpike, through Glen Gardner, to Hampton borough. The selection of this road for improvement proves the wisdom and foresight of our forefathers. Like nearly all of the old turnpikes, the alignment of this road was generally good, and in only two places was it found necessary to materially change the existing road, namely, down the hill to Willoughby creek and at the northern limit of Glen Gardner. The latter is the most marked, as it eliminates two almost right angle turns and gives us an almost direct line from Glen Gardner to Hampton.

The changes in grade on this road were many and marked, as is evidenced by the fact that the maximum grade was reduced from 11 per cent. to 5.1 per cent.

This road also forms a portion of one of the blue routes adopted by the State Highway Commission, which route when completed will connect Belvidere, the county seat of Warren county, upon the banks of the Delaware river, with the county seats lying south and east of it.

The graded width of the road varies from twenty-eight to thirty-two feet, while the width of the pavement is fourteen feet, with a depth varying from six to eleven inches. The pavement is of macadam with a heavy asphalt oil dressing.

Detailed statement of the cost of the Clinton-Hampton road, townships of Clinton and Lebanon, county of Hunterdon, State of New Jersey.

Total length, 27,600 feet, or 5.227 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 27,500 feet.

Depth of stone-bed, 6 and 11 inches.

Macadam, 31,825 square yards, at 70 cents; total,	\$22,277 50
Telford, 11,908 square yards, at 85 cents; total,	10,121 80
Macadam shoulder, 5,055 square yards, at 40 cents; total,	2,022 00
Extra ballast on Telford, 2,490 square yards, at 30 cents; total, ..	747 00
Macadam driveways, 1,141 square yards, at 50 cents; total,	570 50
Earth excavation, 34,365 cubic yards, at 65 cents; total,	22,337 25
Extra excavation, 4,553 cubic yards, at 70 cents; total,	3,187 10
Drain, 9,955 lineal feet, at 18 cents; total,	1,791 90
Cobble stone gutter, 281 square yards, at 90 cents; total,	252 90
Masonry, 303 cubic yards, at \$6.00; total,	1,818 00
Dry slope walls, 102 cubic yards, at \$4.00; total,	408 00
Total,	\$65,533 95
Inspection,	888 00
Engineering,	1,850 00
Extras, paid by county, culverts and pipes, &c.,	2,245 22
Total cost of road,	\$70,517 17

Lump sum, contract price,	57,252 40
Total allowed by the State,	\$65,533 95
One-third of above, amount paid by the State,	21,844 63
Maximum grade before,	11 per cent.
Maximum grade after,	5.1 per cent

GRANT DAVIS,
Engineer.
I. H. HIGGINS,
Inspector.

Hampton Borough Road, .612 Mile Long.

This improvement connects the improved streets of Hampton borough with the Clinton-Hampton improvement and carries the work to the double concrete arch bridge over the Musconetcong river. The latter portion of this route forms the cord of an arc formed by the old road and carries the road in a direct line to the improved one leading through Warren county to Washington.

The graded width varies from twenty-eight to thirty-two feet, while that of the pavement is fourteen feet; this pavement consists of macadam six inches thick treated with a bituminous binder.

In both alignment and grade this road, considering its short length, is a most marked improvement over the old highway.

Detailed statement of the cost of the Hampton Borough road, Borough of Hampton, county of Hunterdon.

Total length, 3,230 feet, or 0.612 miles.
Kind of pavement, macadam.
Width of paved way, 14 feet.
Length of paved way, 3,230 feet.
Depth, macadam, 6 inches; telford, 9 inches.
Width between slopes or curbs, 28 feet.

Foundation, type C, 4,750 square yards, at 40 cents; total,	\$1,900 00
Foundation, type B, 572 square yards, at 60 cents; total,	343 20
Surface, type B, 5,322 square yards, at 50 cents; total,	2,661 00
Surface, type A, 121 square yards, at 60 cents; total,	72 60
Earth excavation, 3,309 cubic yards, at 65 cents; total,	2,150 85
Borrowed embankment, 2,257 cubic yards, at 70 cents; total,	1,579 90
Underdrain, type, French, 1,033 linear feet, at 30 cents; total,	309 90
Gutter, type Rubble, 288 square yards, at \$1.00; total,	288 00
Concrete, 249.9 cubic yards, at \$8.00; total,	1,999 20
Steel for reinforcement, 2,686 lbs., at .03½ cents; total,	94 01
Masonry walls, 9.6 cubic yards, at \$6.00; total,	57 60
12" corrugated pipe, 34 linear feet, at \$1.50,	51 00

\$11,507 26

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Inspection,	204 00
Engineering,	396 00
	<hr/>
Extras paid by county,	\$12,107 26
	<hr/>
Total cost of road,	\$12,151 46
Lump sum, contract price,	9,975 45
Amount allowed by State,	\$12,107 26
Forty per cent. of above, State's share,	4,842 90
Less credit by cost of inspection already paid by State,	204 00
Amount due by State,	4,638 90
Maximum grade before, .....	.8 per cent.
Maximum grade after, .....	.5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

GRANT DAVIS,
Engineer.
JACOB W. FORCE,
Inspector.

Detailed statement of the cost of the Lebanon-Clinton road, county of Hunterdon.

Total length, stated in previous contract.

Bituminous dressing, 29,422 square yards, at 10 cents; total, \$2,942 20

The work on this road was let in two contracts, the first for grading and stone work, covering a length of 3.341 miles, which was reported and described in the report for 1912, and the above work, which was for applying the bituminous dressing.

Lump sum, contract price,	\$2,942 20
Total allowed by the State,	2,942 20
One-third of above, amount paid by the State,	980 73

GRANT DAVIS,
Engineer.
ISAAC CREVELING,
Inspector.

MIDDLESEX COUNTY.

South River and New Brunswick Road, via Thomas and Prospect Streets,
.757 Mile Long.

This road begins at the Old Bridge and New Brunswick turnpike and extends via Prospect and Thomas streets to Main street, in South River. This reduces the distance between New Brunswick and South River by one mile, forming as it does the third side of a triangle. As this route is also on the main line between New Brunswick and South Amboy, the value of this improvement is readily seen.

The graded width is twenty-four feet. It was originally intended to surface this road with gravel, but, owing to the heavy nature of the soil and the constantly increasing travel, it was deemed wise to change this pavement to macadam sixteen feet wide and eight inches thick. Owing to the heavy clay soil and the rough nature of the country the cost of the grading, drainage and guttering exceeded that of the pavement.

Detailed statement of the cost of the South River and New Brunswick via Thomas and Prospect streets road, borough of South River, county of Middlesex.

Total length, 4,000 feet, or 0.757 miles.
Kind of pavement, macadam.
Width of paved way, 16 feet.
Length of paved way, 4,000 feet.
Depth, 8 inches.

Foundation, type C }	7,930 square yards, at 90 cents; total,	\$7,137 00
Surface, type A }		
Earth excavation, 6,597 cubic yards, at 25 cents; total,		1,649 25
Under drain, 1,580 lineal feet, at 20 cents; total,		316 00
Gutter, type, cobblestone, 990 square yards, at \$1.45; total,		1,435 50
Raising two manholes, at \$5.00; total,		10 00
Driveways, macadam, 259 square yards, at 90 cents; total,		233 10
Grubbing, $\frac{1}{3}$ acre, at \$50.00; total,		16 67
Brick-bats, 1,464 cubic yards, at \$1.25; total,		1,830 00
Concrete retaining wall 120 cubic yards, at \$7.00; total,		840 00
One receiving basin, as per contract,		183 00
		<hr/>
		\$13,650 52
Inspection,		540 00
Engineering,		697 85
		<hr/>
		\$14,888 37
Extras paid by county, pipe and labor,		306 50
		<hr/>
Total cost of road,		\$15,194 87
Lump sum, contract price,		8,792 50
		<hr/>
Amount allowed by State,		\$13,650 52
One-third of above, paid by State,		4,550 17
		<hr/>
Maximum grade before,		7 per cent.
Maximum grade after,		5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

ALVIN B. FOX,

Engineer.

ROBERT A. ARMSTRONG,

Inspector.

Spottswood and Englishtown Road, First Section, 2.015 Miles Long.

This begins in Spottswood at the road leading from Spottswood to the Old Bridge and Englishtown road and extends southerly to the cross-road leading to Texas. It is the first section of the

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road built to connect Spottswood with the Jamesburg and Englishtown road. It is built through a very rough and hilly country, therefore its through value is much more than its local value.

The width of the improved roadway is twenty-four feet, upon which gravel was spread for a width of eighteen feet and to a depth varying from nine inches at the center to three inches on either side.

An idea of the nature of the soil and its hilly character may be gleaned from the fact that the grading and drainage costs were practically double that of the gravel. The maximum grade was reduced from 8.7 per cent. to 5 per cent.

Detailed statement of the cost of the Spottswood and Englishtown road, first section, township of East Brunswick, county of Middlesex.

Total length, 10,640 feet, or 2.015 miles.

Width of gravel bed, 18 feet.

Length of gravel-bed, 10,640 feet.

Depth of gravel-bed, 9 inches in centre, 3 inches on sides.

Herringbone drain with sand fill, 1,800 lineal feet, at 57 cents; total,	\$1,026 00
Grubbing, 2.75 acres, at \$75.00; total,	206 25
Gravel, 3,585 cubic yards, at \$1.22; total,	4,373 70
Extra gravel, 3 loads, at \$1.50; total,	4 50
Earth excavation, 12,856 cubic yards, at 30 cents; total,	3,856 80
Extra fill, 821 cubic yards, at 15 cents; total,	123 15
Ditch in woods for drainage,	20 12
Drain, 6-inch, 2,461 lineal feet, at 26.5 cents; total,	652 17
Trench filled with broken stone, 1,500 lineal feet, 166 cubic yards, at \$5.00; total,	830 00
Cobblestone gutter, 55 square yards, at \$1.75; total,	96 25
Grub and grade road approach,	45 00
One catch basin,	15 00
Total,	<hr/> \$11,248 94
Inspection,	1,212 95
Engineering,	562 45
Extras, paid by county, pipe and labor,	766 56
Total cost of road,	<hr/> \$13,790 90
Lump sum, contract price, less \$125 for 4-inch drain, not used, ...	8,024 70
Total allowed by the State,	11,248 94
One-third of above amount paid by the State,	3,749 65

Maximum grade before, 8.70 per cent.
Maximum grade after, 5.00 per cent.

ALVIN B. FOX,
Engineer.

EDWARD BEEBE,
Inspector.

Spottswood and Englishtown Road, Second Section, 3.68 Miles Long.

This road begins at the end of the first section, just described, and carries it southerly to the improved road leading from Jamesburg to Englishtown, thus forming a route several miles shorter between New Brunswick and Freehold, and as such has been adopted as one of our blue routes.

The width of the graded roadway varies from twenty-eight to thirty-two feet, while that of the gravel was eighteen feet, the latter varying in depth from nine inches in the center to three inches on either side.

The changes in grade on this road were most marked, the maximum grade being reduced from fifteen per cent. to five per cent. As a result the cost of the excavation alone was one-half of that of the entire improvement.

Detailed statement of the cost of the Spottswood and Englishtown road, second section, township of Monroe, county of Middlesex.

Total length, 19,433 feet, or 3.680 miles.

Kind of pavement, gravel.

Width of paved way, 18 feet.

Length of paved way, 19,433 feet.

Depth, 9 inches in center, and 3 inches at sides.

Gravel, 6,613 cubic yards, at \$1.00; total,	\$6,613 00
Earth excavation, 33,659 cubic yards, at 35 cents; total,	11,780 65
Under drain, type round, porous tile, 5,025 lineal feet, at 25 cents; total,	1,256 25
Extending concrete culvert station 195+30,	600 00
Concrete retaining walls, 29 cubic yards, at \$10.00; total,	290 00
Guard rail, 6,750 lineal feet, at 16.71 cents; total,	1,128 10
Extra excavation (ditches), 160 cubic yards, at 50 cents; total, ..	80 00
Grubbing, 2 acres, at \$75.00; total,	150 00
Boards for drain, 3,825 lineal feet, 1"×6", at 2.5 cents; total,	95 63
12" Terra Cotta pipe, 12 lineal feet, at \$1.00; total,	12 00
Corrugated iron pipe, 32'-12"; 36'-18"; 72'-30"; 38'-48",	407 40
Labor placing pipe,	83 82
Total,	\$22,496 85
Less difference between items and lump sum bid,	135 60
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	\$22,361 25
Inspection,	816 00
Engineering,	566 21
	<hr/>
	\$23,743 46
Extras paid entirely by county, 38'-60" corrugated pipe, \$218.50,	
labor placing same, \$68.83,	287 33
	<hr/>
Total cost of road,	\$24,030 79
Lump sum, contract price,	18,448 00
	<hr/>
Amount allowed by State,	\$22,361 25
One-third of above, State's share,	7,453 75



Highland Park and Bonhamtown Road, Middlesex County,
During Construction.



Highland Park and Bonhamtown Road, or Woodbridge Avenue,
Middlesex County, After Improvement.

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Maximum grade before, 15 per cent.
 Maximum grade after, 5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

ALVIN B. FOX,

Engineer.

JOHN W. CORTELYOU,

Inspector.

**Highland Park and Bonhamtown Road, or Woodbridge Avenue, 3.902
 Miles Long.**

This road begins at Raritan avenue in Highland Park, otherwise known as the old Essex and Middlesex turnpike, and runs over what was the line of the old Woodbridge turnpike to Bonhamtown.

The road is graded for a width of thirty feet and paved with macadam sixteen feet wide and eight inches deep.

This improvement is a portion of the old highway between New Brunswick and Woodbridge and Perth Amboy, and forms the most direct route between these two places and the county seat.

Owing to the many and varied soils encountered the cost of this road far exceeds its original contract price. Some of the cuts which began in hard, firm earth or clay ran into fine sand before reaching the established grade. Owing to this fact it was necessary to construct retaining walls, rip-rap over 1,500 square yards of embankment, and cobble several hundred feet of the gutters.

When completed this road will give the inhabitants of New Brunswick and the region round about the most direct outlet to salt water that it is possible for them to have. The maximum grade was reduced from 6.75 per cent. to 4.138 per cent.

Detailed statement of the cost of the Highland Park and Bonhamtown road, or Woodbridge avenue from Highland Park to Bonhamtown, borough of Highland Park and township of Raritan, county of Middlesex. Total length, 20,600 feet, or 3.902 miles.

Width of stone-bed, 16 feet.

Length of stone-bed, 20,600 feet.

Depth of stone-bed, 8 inches.

Macadam, (Waterbound), 41,138 square yards, at 80 cents; total,	\$32,910 40
Macadam driveways, 1,250 square yards, at 80 cents; total,	1,000 00
Earth excavation, 30,435 cubic yards, at 65 cents; total,	19,782 75
Concrete toe wall, 341 cubic yards, at \$10.50; total,	3,580 50
Rip-Rap, 1,519 square yards at \$2.00; total,	3,038 00
Cobble gutter, 1,924 square yards at \$1.59; total,	3,059 16
Brick catch basins with manhole covers, 2, at \$60.00; total,	120 00

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Four-inch porous tile drain, 22,534 lineal feet, at 20 cents; total,	\$4,506 80
Twelve-inch Vitrified pipe without concrete cover, 30 lineal feet, at \$1.25; total,	37 50
Eighteen-inch Vitrified pipe without concrete cover, 190 lineal feet, at \$1.38; total,	262 20
Eighteen-inch Vitrified pipe with concrete cover, 44 lineal feet at \$1.58; total,	69 52
Twenty-four-inch Vitrified pipe without concrete cover, 464 lineal feet, at \$2.00; total,	928 00
Twenty-four-inch Vitrified pipe with concrete cover, 50 lineal feet, at \$2.25; total,	112 50
Thirty-six-inch Vitrified pipe without concrete cover, 100 lineal feet, at \$3.55; total,	355 00
Thirty-six-inch brick connection (tee), 10 lineal feet, at \$5.00; total,	50 00
Total,	\$69,812 33
Inspection,	1,024 65
Engineering,	2,666 65
Extras Paid by County.	
Excess cut, \$3,914.95; Extend mill run culvert, \$669.75; Guard rail, \$2,002.50; Piscataway bridge, \$395.00; 66 ft. 24-inch T. C. pipe, \$148.50; total,	7,130 70
Total cost of road,	\$80,634 33
Lump sum, contracts price,	\$53,333 15
Total allowed by the State,	\$69,812 33
One-third of above amount paid by the State,	23,270 78
Maximum grade before,	6.75 per cent.
Maximum grade after,	4.138 per cent.

ALVIN B. FOX,

Engineer.

PAUL F. RANDOLPH,

Inspector.

Detailed statement of the cost of the Keasbey creek bridge, Perth Amboy and Keasbey road, township of Woodbridge, county of Middlesex.

Span, 28'-0".

Width, 30'-0" clear.

Total cost of bridge,	\$5,600 00
Lump sum, contract price,	5,600 00
Total allowed by State,	\$5,600 00
Twenty per cent. of above, State's share,	1,120 00

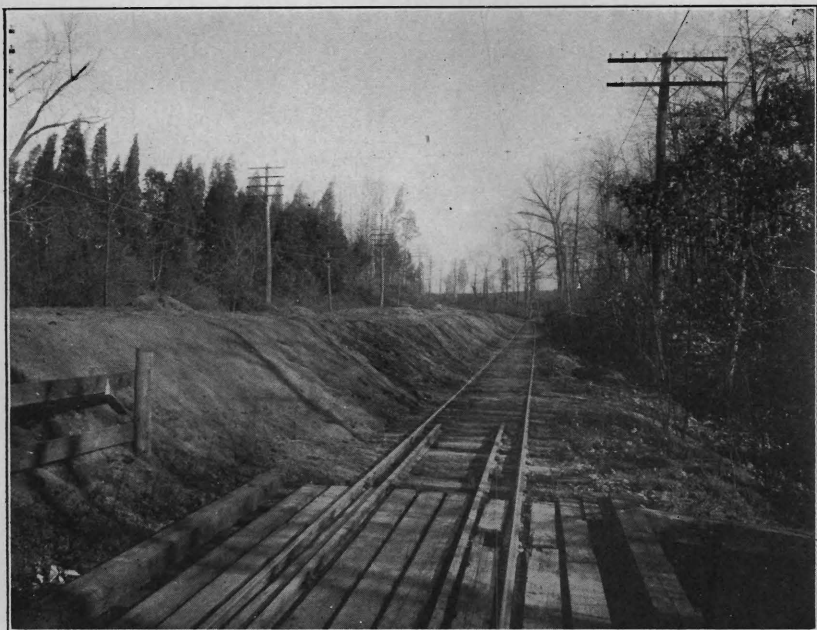
We hereby certify that the above bridge is finished in all respects in strict compliance with the plans and specifications.

ALVIN B. FOX,

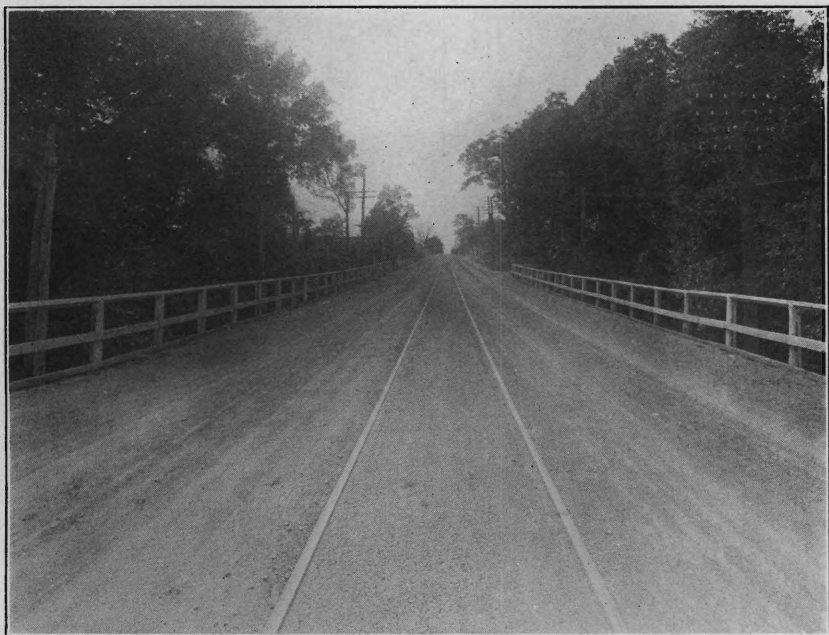
Engineer.

WILLIAM O'REILLY,

Inspector.



Highland Park and Bonhamtown Road, or Woodbridge Avenue,
Middlesex County, Before Improvement.



Highland Park and Bonhamtown Road, Middlesex County,
After Improvement.

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MONMOUTH COUNTY.

Englishtown-Jamesburg Road, 1.115 Miles Long.

This improvement begins at the town limits of Englishtown and extends to the easterly end of the bridge. This section is improved with gravel eighteen feet wide and eight inches thick. The second section begins at the westerly end of the bridge over Matchaponix creek and extends to the Pennsylvania near the station. This latter section is paved with macadam sixteen feet wide and from six to ten inches thick.

The reason for the variation in the paving material was that all of the heavy hauling from the railroad station to the town passes over the section stoned, while the lighter traffic is principally over the gravelled section.

The construction of this road practically completes the improved highway from Jamesburg to Freehold, through Englishtown, and in addition furnishes the residents of Englishtown with a smooth, hard road at all seasons of the year over which to travel to and from the railroad station. The grading of the roadway on both sections was carried to a width of thirty feet. Only slight changes in grade were necessary, but eighteen hundred feet of underdrain was found necessary owing to the great amount of water encountered in the prosecution of the work.

Detailed statement of the cost of the Englishtown-Jamesburg road, borough of Englishtown, township of Manalapan, county of Monmouth.

Total length, 5888.45 feet, or 1.115 miles.

Width of stone-bed, 16 feet.

Length of stone-bed (macadam, 3,139 feet; Telford, 800 feet), 3,939 feet.

Depth of stone-bed, macadam, 6 inches; Telford, 10 inches.

Width of gravel-bed, 18 feet.

Length of gravel-bed, 1,837 feet.

Depth of gravel-bed, 8 inches.

Macadam, 5580.8 square yards, at 75 cents; total,	\$4,185 60
Telford, 1422.22 square yards, at \$1.00; total,	1,422 22
Gravel (compacted), 816.6 cubic yards, at 90 cents; total,	734 94
Gravel shoulders (compacted), 666 cubic yards, at 90 cents; total,	599 40
Earth excavation, 2,350 cubic yards, at 30 cents; total,	705 00
Plus difference between items and lump sum,	2 84
Total,	\$7,650 00
Drain, extra, 1,800 lineal feet, at 35 cents; total,	630 00
Total,	\$8,280 00
Inspection,	525 00
Engineering,	248 40
	<hr/>
	\$9,053 40

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Lump sum, contract price,	\$7,650 00
Extra shared by State (1,800 feet tile drain at 35 cents),	630 00
Total allowed by the State,	\$8,280 00
One-third of above amount paid by the State,	2,760 00
Maximum grade before,	2.7 per cent.
Maximum grade after,	1.666 per cent.

GEORGE D. COOPER,
Engineer.

JAMES T. APPLGATE,
Inspector.

Detailed statement of the cost of the Red Bank-Holmdell road, third section, Holmdel bridge, township of Holmdell, county of Monmouth. Total length of bridge, 74 feet and 8 inches.

Kind of pavement over bridge, slag and gravel.
Clear width of bridge, 24 feet.

Changing course of stream,	\$50 00
Slag and gravel surfacing of bridge,	110 75
Engineering,	166 65
Lump sum, contract price,	3,333 00
Total cost of bridge,	\$3,660 40
Amount allowed by State,	\$3,660 40
Twenty per cent. of above, State's share,	732 08

I hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

FRANK L. PITCHER,
Engineer.

Sea Bright- Highlands Road, 1.666 Miles Long.

This improvement begins at the end of the cut-off built by the county last year to eliminate two dangerous railroad crossings and extends thence north along a sand bar between the Atlantic Ocean and the so-called Shrewsbury and Navesink rivers or inlets. Owing to its peculiar location there was little change in grade.

Throughout a greater portion of its length this road is protected from the inroads of the ocean by a high double bulkhead, while the opposite side is lined with summer cottages. This is a part of the Ocean Highway so often referred to. It ends for the present at the Long Branch railroad crossing. It is the intention of all of the parties in interest to avoid this crossing



Boulevard, Boonton, Morris County, Before Improvement.



Boulevard, Boonton, Morris County, After Improvement.

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by swinging the road to the west, paralleling the railroad to Navesink.

This road had been improved by the local authorities and for a time answered the end for which it was built, but could not withstand the heavy through traffic; therefore it was taken over by the county and State.

Detailed statement of the cost of the Sea Bright-Highlands road, township of Ocean, county of Monmouth.

Total length, 8,768 feet, or 1.666 miles.
Kind of pavement, gravel.
Width of gravel-bed, 18 feet.
Length of gravel-bed, 8,768 feet.
Depth of gravel-bed, 6 inches.
Width between slopes or curbs, 30 feet.

Gravel, 2,973 cubic yards, at \$2.00; total,	\$5,946 00
Earth excavation, 1,992 cubic yards, at 20 cents; total,	398 40
Excess fill required, 4,447 cubic yards, at 80 cents; total,	3,557 60
Excess of lump sum price over price by items,	49 51
Lump sum, contract price,	\$9,951 51
Inspection,	550 55
Engineering,	215 14
Total cost of road,	\$10,717 20
Lump sum, contract price,	9,951 51
Amount allowed by State,	\$10,717 20
Forty per cent. of above amount paid by State,	4,286 88
Less credit by cost of inspection already paid by State,	550 55
Amount due by State,	3,736 33
Maximum grade before,	2.5 per cent.
Maximum grade after,	2.2 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

G. K. ALLEN, JR.,
Engineer.
MICHAEL ROWLAND,
Inspector.

MORRIS COUNTY.

Boulevard, Boonton, 1.99 Miles Long.

This improvement begins at the pavement on West Main street, Boonton, and extends southerly over a new right of way to a point where the Boulevard leaves the right of way of the Morris County Traction Company, near the reservoir, at which point it meets a newly macadamized road.

The completion of this road gives the people of Boonton an outlet to Denville, Rockaway and Dover two miles shorter than

the old route by way of the reservoir and Parsippany. Not only does this improvement shorten the line but it also enables the traveler to avoid the very heavy grades between Parsippany and Fox Hill. Some idea of the improvement made may be had when it is known that the maximum grade was reduced from 8.3 per cent. to 3.89 per cent. Although the pavement was sixteen feet wide and had a total depth of seven inches, with a top of cold mixed asphalt concrete, the grading and drainage cost more than the pavement. This road was built over a wet, heavy soil full of hills and hollows, and even after it was roughly graded was unfitted for ordinary vehicular travel. Now this is all changed and a smooth, hard highway, graded to a width of thirty-three feet, has induced many persons to build or commence the construction of fine country residences along its line.

Detailed statement of the cost of the Boonton-Boulevard road, townships of Hanover, Boonton and town of Boonton and county of Morris. Total length, 10,508 feet, or 1.99 miles.

Kind of pavement, Telford foundation; Asphalt concrete surface.

Width of paved way, 16 feet.

Length of paved way, 10,508 feet.

Depth, 7 inches.

Width, between slopes or curbs, 33 feet.

Foundation, type, Telford, 19,529 square yards, at 22 cents;	
total,	\$4,296 38
Surface, Asphalt concrete, 19,529 square yards, at 90 cents;	
total,	17,576 10
Earth excavation and extra material needed for embankment,	
31,960 $\frac{3}{4}$ cubic yards, at 67.5 cents; total,	21,573 50
Eighteen-inch wrought iron pipe, 277 lineal feet, at \$2.00,	554 00
Eighteen-inch vetrified tile, 252 lineal feet, at \$1.00,	252 00
Total,	\$44,251 98
Inspection,	636 00
Engineering,	2,093 07
	\$46,981 05
Extras paid by county,	101 87
Total cost of road,	\$47,082 92
Lump sum, contract price,	\$44,234 76
Amount allowed by State,	46,981 05
Forty per cent. of above, State's share,	\$18,792 42
Less credit by cost of inspection already paid by State,	636 00
Amount due by State,	\$18,156 42
Maximum grade before,	8.3 per cent.
Maximum grade after,	3.89 per cent.

COMMISSIONER OF PUBLIC ROADS.

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We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

WM. E. KING,
County Engineer.
ALBERT BUNN,
Inspector.

Landing -Mt. Arlington Road, 2.534 Miles Long.

This improvement begins at the railroad bridge over the Lackawanna Railroad, at Landing, and extends in a general northerly direction along the easterly border of Lake Hopatcong to Altenbrandt avenue, Mt. Arlington.

Owing to the rapidly increasing popularity of New Jersey's largest lake as a summer resort, it became almost an absolute necessity that an improved road should be constructed from the principal railroad station, on the Lackawanna Railroad, to the largest borough on the borders of the lake. The old road followed a winding and tortuous course around the lower end of the lake, past the storehouses and plant of the powder company, and thence over boulders and through mudholes to its end. Now this is all changed, and in proof of the appreciation of the benefits conferred upon the property owners along its line we would cite that the powder company not only gave a free right of way but tore down and removed several buildings, and the private owners are expending much money to improve and beautify the fronts of and approaches to their residences.

Many marked changes in alignment were made; the first was a fill several hundred feet in length across an arm of the lake; the second was a sweep to the westward to avoid a very long and steep climb. The change in grade was also very great, the maximum gradient being reduced from 10.7 per cent. to 5 per cent. The total width of the graded roadway is thirty-two feet, while that of the cold-mixed bituminous concrete, upon a macadam base, is sixteen feet, the total depth of the pavement being six inches.

Detailed statement of the cost of the Landing-Mt. Arlington road, township of Roxbury and borough of Mt. Arlington, county of Morris. Total length, 13,377 feet, or 2.534 miles.

Kind of pavement, Type C foundation, Type H surface.
Width of paved way, 16 feet.
Length of paved way, 13,377 feet.
Depth, 6 inches.
Width between slopes or curbs, 32 feet.

Foundation, type C, 24,910 square yards, at 50 cents; total,	\$12,455 00
Surface, type H, 25,151.4 square yards, at 80 cents; total,	20,121 12
Earth excavation, 41,130¾ cubic yards, at 45 cents; total,	18,508 83

Under drain, type French, 500 lineal feet, at 40 cents; total,....	\$200 00
Wrought iron pipe, 15-inch, 118 lineal feet, at \$1.50; total,	177 00
Wrought iron pipe, 18-inch, 208 lineal feet, at \$2.00; total,	416 00
Wrought iron pipe, 20-inch, 364 lineal feet, at \$2.50; total,	910 00
Wrought iron pipe, 24-inch, 293 lineal feet, at \$3.00; total,	879 00
Concrete masonry, 23.4 cubic yards, at \$7.50; total,	175 50
	<hr/>
Less difference between item and lump sum bid,	\$53,842 45
	<hr/>
Inspection,	906 00
Engineering,	2,900 43
	<hr/>
Extras paid by county,	\$57,043 88
	<hr/>
Total cost of road,	1,183 59
	<hr/>
Lump sum, contract price,	\$58,227 47
Amount allowed by State,	<hr/>
	\$52,588 55
	<hr/>
Forty per cent. of above, State's share,	57,043 88
Less credit of cost of inspection already paid by State,	<hr/>
	\$22,817 55
	<hr/>
Amount due by State,	906 00
	<hr/>
Maximum grade before,	\$21,911 55
Maximum grade after,	<hr/>
	10.7 per cent.
	5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

WILLIAM E. KING,

Engineer.

EDWARD W. KILPATRICK,

Inspector.

UNION COUNTY.

Lakewood and New Egypt Road, Middle Section, 5.445 Miles Long.

This road begins at the gravel end of the eastern section, in Cassville, and extends eastward to the junction of the road from Holmansville with the road from Bowman's bridge to Lakehurst. It is cut and filled to a width of thirty feet, covered with gravel for a width of eighteen feet and to a depth of eight inches in the center, decreasing to four inches on either side.

Commencing at Cassville, it was necessary to lay out a new route in order to eliminate two right angle turns. The road was accordingly built through the woods, crossing the stream over a concrete arch bridge and intersecting the old road at a point some distance to the eastward of Cassville. This road, though built through the sand and pines, crossed a heavily rolling country for part of its course. This necessitated the reducing of the maximum grade from 10 per cent. to $2\frac{1}{2}$ per cent. This change in grade was affected more by filling than by cutting.

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Detailed statement of the cost of the Lakewood and New Egypt road, middle section, township of Jackson, county of Ocean. Total length, 28,750 feet, or 5.445 miles.

Width of gravel-bed, 18 feet.

Length of gravel-bed, 28,750 feet.

Depth of gravel-bed, 8 inches in center, 4 inches at sides.

Gravel, 9,583 $\frac{1}{3}$ cubic yards, at \$1.00; total,	\$9,583 33
Extra material required for embankment, 5,200 cubic yards, at 27 cents; total,	1,404 00
Earth excavation, 24,021 cubic yards, at 27 cents; total,	6,485 67
Grubbing, 4 $\frac{3}{4}$ acres, at \$100.00; total,	475 00
Drain, 100 lineal feet, at 25 cents; total,	25 00
Turfing slopes, 5,140 square yards, at 20 cents; total,	1,028 00
	<hr/>
	\$19,001 00
Less difference between items and lump sum,	25 00
	<hr/>
Contract price,	\$18,976 00
Less 100-foot drain, at \$25.00, not laid,	25 00
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Total,	\$18,951 00
Inspection,	633 00
Engineering,	630 22
	<hr/>
Total cost of road,	\$20,214 22
	<hr/>
Lump sum, contract price,	\$18,951 00
	<hr/>
Total allowed by the State,	\$18,951 00
One-third of above amount paid by the State,	6,317 00
	<hr/>
Maximum grade before,	10 per cent.
Maximum grade after,	2.5 per cent.

I. H. CRAMER,

Engineer.

THOMAS H. HARKER,

Inspector.

Lakewood and New Egypt Road, Western Section, 6.11 Miles Long.

This improvement begins at the end of the gravel road through New Egypt, and extends to the center of the road at Cassville. It is graded to a width of thirty feet, and is covered with gravel for a width of eighteen feet and to a depth of eight inches in the center, decreasing to four inches on either side.

This improvement converts what was a mere wagon track through the pines into a fine, broad boulevard. Although it is built through a comparatively level country, it was found necessary to level many hills and fill many hollows, with the result that the maximum grade was reduced from 7 per cent. to 2 $\frac{1}{2}$ per cent.

The grading, grubbing and draining of this road amounted to two and one-half times the cost of the gravel. This probably expresses in figures as plainly as possible the amount of work done and changes made.

TWENTIETH ANNUAL REPORT

Detailed statement of the cost of the Lakewood and New Egypt road, western section, townships of Plumsted and Jackson, county of Ocean. Total length, 32,260 feet, or 6.110 miles.

Width of gravel-bed, 18 feet.

Length of gravel-bed, 32,260 feet.

Depth of gravel-bed, 8 inches in center, 4 inches at sides.

Gravel, 10,753 $\frac{1}{3}$ cubic yards, at \$1.20; total,	\$12,904 00
Earth excavation, 38,804 cubic yards, at 30 cents; total,	11,641 20
Grubbing, 7.5 acres, at \$75.00; total,	562 50
Drain, 100 lineal feet, at 25 cents; total,	25 00
Extra material required for embankment, 7,680 cubic yards, at 36 cents; total,	2,764 80
Turfing slopes, 10,700 square yards, at 20 cents; total,	2,140 00
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	\$30,037 50
Less difference between items and lump sum,	87 50
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Contract price,	\$29,950 00
Less tile drain not laid,	25 00
	<hr/>
	\$29,925 00
Extra work:	
Earth excavation (from Shannock hill and Allen's hill), 837 cubic yards, at 30 cents; total,	251 10
Earth embankment near Zion church, 163 cubic yards, at 30 cents; total,	48 90
Turf banks,	950 00
Approach to property of C. Van Hise, grading and gravelling,	15 00
	<hr/>
Total,	\$31,190 00
Inspection,	892 50
Engineering,	936 45
	<hr/>
Total cost of road,	\$33,018 95
Lump sum, contract price,	29,950 00
	<hr/>
Total allowed by the State,	\$31,190 00
One-third of above amount paid by the State,	10,396 67
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Maximum grade before,	7 per cent.
Maximum grade after,	2.5 per cent.

I. H. CRAMER,
Engineer.
JOHN H. DAVIS,
Inspector.

Lakehurst and Brown's Mills Road, Eastern Section, 5.777 Miles Long,
Western Section A, 2.841 Miles Long.

Owing to the fact that the old road was so crooked and tortuous in its course, it was found necessary to carry this improvement for a greater part of its length over a new route through the pines from Lakehurst to the Burlington county line.

The last section, known as Western Section B, is nearly completed, but not in time to be reported this year. The completion

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of this road, together with the short section in Burlington county, gives us a practically east and west road from Camden to Whiting, at which point it bears northeastward to Lakehurst. When the work is finally completed the people of Camden, the lower Delaware Valley and Philadelphia will have another improved outlet to the seashore that they have long desired.

Though this country is generally described as flat, a number of sharp gravel hills and swamps were encountered in the course of the improvement, necessitating the reducing of the maximum grade from 7.4 per cent. to 2 per cent.

The grading, grubbing and draining done on this road cost much more than the gravelling, hence this work may be truly called a permanent improvement.

The graded width of this new road is thirty-three feet, twenty-four feet of which is covered with good gravel varying in depth from nine inches in the center to three inches on either side.

Detailed statement of the cost of the Lakehurst-Brown's Mills road, eastern section, township of Manchester, county of Ocean. Total length, 30,500 feet, or 5.777 miles.

Kind of pavement, gravel.

Width of paved way, 24 feet.

Length of paved way, 30,444 feet.

Depth, 9 inches in center, 3 inches at sides.

Width between slopes or curbs; 33 feet.

Gravel, 13,555 $\frac{1}{2}$ cubic yards, at \$1.09; total,	\$14,775 43
Earth excavation, 44,997 cubic yards, at 26 cents; total,	11,699 22
Under drain, 4 inches round, porous tile, 300 lineal feet, at 25 cents; total,	75 00
Turfing embankments, 8,680 square yards, at 26 cents; total, ..	2,256 80
Grubbing, 13 $\frac{1}{2}$ acres, at \$100; total,	1,350 00
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	\$30,156 45
Plus difference between items and lump sum,	4 98
	<hr/>
Lump sum, contract price,	\$30,161 43
Less amount deducted for drain not laid,	75 00
	<hr/>
	\$30,086 43
Inspection,	1,204 28
Engineering,	904 84
	<hr/>
Total cost of road,	\$32,195 55
	<hr/>
Lump sum, contract price,	\$30,161 43
	<hr/>
Amount allowed by State,	\$30,086 43
One-third of above, State's share,	10,028 81
Less credit by payment already made by State,	8,021 72
	<hr/>
Amount due by State,	\$2,007 09

TWENTIETH ANNUAL REPORT

Maximum grade before,	11.4 per cent.
Maximum grade after,	2.5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

I. H. CRAMER,
Engineer.
W. L. LANCE,
Inspector.

Detailed statement of the cost of the Lakehurst-Brown's Mills road, western section A, township of Manchester, county of Ocean. Total length, 15,000 feet, or 2.841 miles.

Kind of pavement, gravel.	
Width of paved way, 24 feet.	
Length of paved way, 15,000 feet.	
Depth, 9 inches in center, 3 inches at sides.	
Width between slopes or curbs, 33 feet.	
Turfing slopes, 3,000 cubic yards, at 25 cents; total,	\$750 00
Gravel, 6,667 cubic yards, at \$1.00; total,	6,667 00
Earth excavation, 24,142 cubic yards, at 30 cents; total,	7,242 60
Under drain, 100 lineal feet, at 25 cents; total,	25 00
Grubbing, 11 acres, at \$100.00; total,	1,100 00
	<hr/>
	\$15,784 60
Amount deducted for drain not laid,	25 00
	<hr/>
	\$15,759 60
Inspection,	501 00
Engineering,	473 54
	<hr/>
Total cost of road,	\$16,734 14
	<hr/>
Lump sum, contrac price,	\$15,784 60
	<hr/>
Amount allowed by State,	\$16,734 14
Forty per cent. of above, State's share,	6,693 66
Less credit by cost of inspection already paid by State,	501 00
	<hr/>
Amount due by State,	\$6,192 66
	<hr/>
Maximum grade before,	7.4 per cent.
Maximum grade after,	2 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

I. H. CRAMER,
Engineer.
WM. PITTIS,
Inspector.

Lakewood and New Egypt Road, Eastern Section, 1.995 Miles Long.

The completion of the grading and gravelling of this section from the end of that finished last year to the Lakehurst and Alligator road completes the chain of improved roads from the

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Middle Delaware river section to the Atlantic ocean, via New Egypt, Lakewood and Point Pleasant.

The changes in both grade, alignment and width are most marked. The old road in many places was barely a single track through the pines. Now this is all changed. We have a smooth highway thirty feet in width, covered in the center for a width of eighteen feet with gravel varying in depth from eight inches in the center to four inches on either side.

The road was further greatly improved by cutting down the hills and filling the bogs. An idea of the extent to which this work was carried may be had from the statement below, which shows that the maximum grade was reduced from 3.8 per cent. to .48 per cent.

Detailed statement of the cost of the Lakewood and New Egypt road, eastern section, township of Jackson, county of Ocean. Total length, 10,531 feet, or 1.995 miles.

Kind of pavement, gravel.

Width of paved way, 18 feet.

Length of paved way, 10,531 feet.

Depth, 8 inches in center, 4 inches at sides.

Width between slopes or curbs, 30 feet.

Gravel, 3,510 $\frac{1}{3}$ cubic yards, at 74 cents; total,	\$2,597 65
Earth excavation, 10,105 cubic yards, at 26 cents; total,	2,627 30
Under drain, type tile, 100 linear feet at 25 cents; total,	25 00
Grubbing, 1 acre, at \$75.00; total,	75 00
Turfing slopes of embankment, 1,818 square yards, at \$.18; total, ..	327 24
Turf banks on dam, 353 square yards, \$.75; total,	264 75
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	\$5,916 94
Less difference between items and lump sum,	41 94
	<hr/>
	\$5,875 00
Less amount deducted for drain not laid,	25 00
	<hr/>
	\$5,850 00
Inspection,	258 00
Engineering,	262 78
	<hr/>
Total cost of road,	\$6,370 78
Lump sum, contract price,	\$5,875 00
	<hr/>
Amount allowed by State,	\$6,370 78
Forty per cent. of above, State's share,	2,548 31
Less credit by cost of inspection already paid by State,	258 00
	<hr/>
Amount due by State,	\$2,290 31

Maximum grade before, 3.8 per cent.
Maximum grade after, 0.48 per cent.

TWENTIETH ANNUAL REPORT

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

I. H. CRAMER,
Engineer.
JOHN H. DAVIS,
Inspector.

PASSAIC COUNTY.

Weasel Road (River Road), .648 Mile Long.

This road follows the western side of the Passaic River from Weasel Brook northward to a point where the road is at present torn up for the construction of the Passaic Valley sewer. After the completion of the sewer it is the intention of the authorities to extend the improvement northward to Vreeland Avenue, in the city of Paterson.

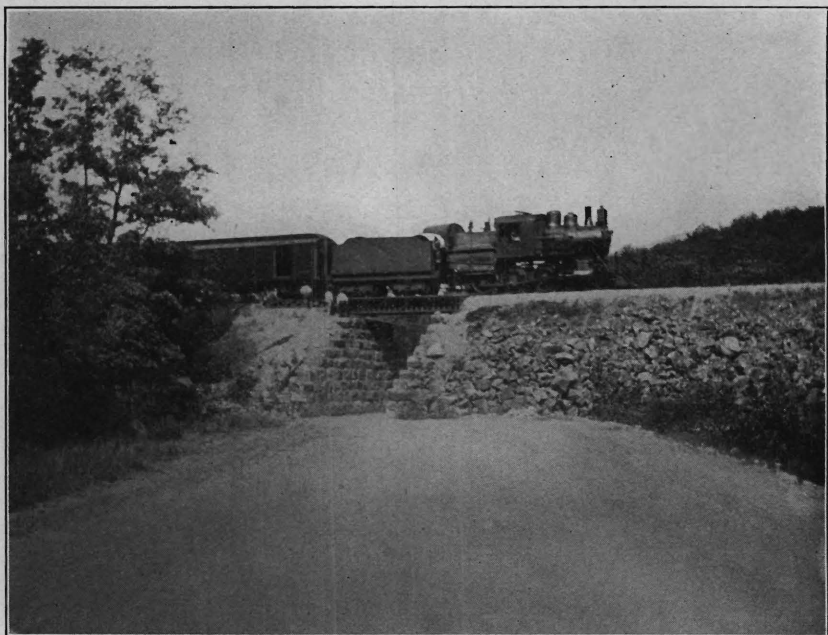
The completion of this work, together with the construction of the Passaic Valley sewer, will restore this road to what it formerly was, a beautiful river drive.

The graded width of the roadway varies from thirty to thirty-four feet; the width of the asphalt concrete pavement runs from twenty to twenty-four feet. This asphalt concrete is three inches thick after ultimate compression and was laid upon the old macadam road as a foundation.

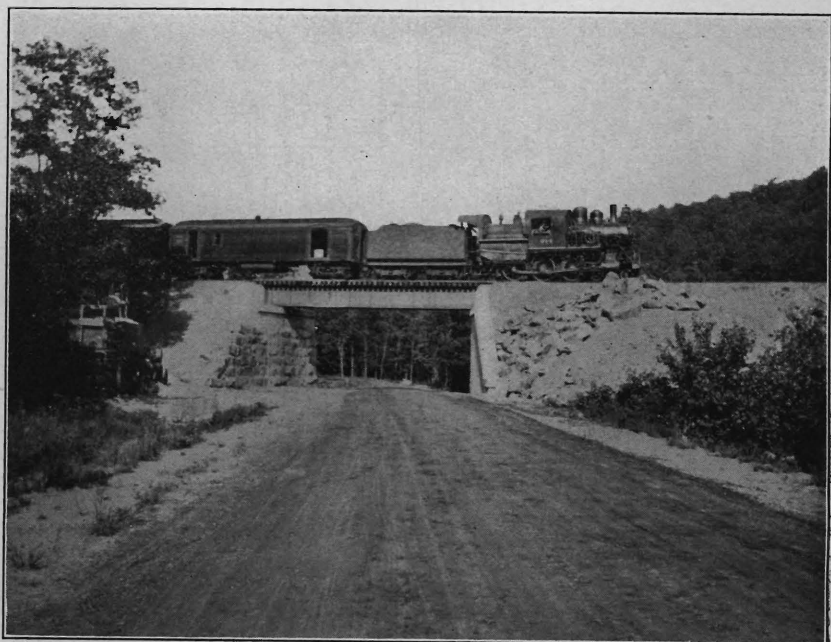
Detailed statement of the cost of the Weasel road (River road), township of Acquackanonk, county of Passaic. Total length (portion only of original contract improved), 3,422 feet, or 0.648 miles.

Kind of pavement, asphalt concrete type G-1.
Width of paved way, 24 feet.
Length of paved way, 3,422 feet.
Depth, 3 inches top, 4 inches foundation, loose meas.

Foundation, type C, 915.5 cubic yards, at \$2.25; total,	\$2,059 88
Surface, type G-1, 9,269.5 square yards, at \$1.09; total,	10,103 76
Gravel binder, 463.5 cubic yards, at \$1.12½; total,	521 44
Earth fill, 424 cubic yards, at 37 cents; total,	156 88
Trees removed, 4, at \$10.00; total,	40 00
	<hr/>
	\$12,881 96
Inspection,	75 00
Extras paid by county, including catch basins, pipe and concrete culvert repairs,	196 00
	<hr/>
Total cost of road,	\$13,152 96
	<hr/>
Lump sum, contract price,	\$40,837 86
	<hr/>
Amount allowed by State,	\$12,881 96
One third of above, State's share,	4,293 99



Midvale and Greenwood Lake Road, Passaic County, After Improvement of Under-Grade Crossing.



Midvale and Greenwood Lake Road, Passaic County, After Improvement of Under-Grade Crossing.

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Maximum grade before, 2.00 per cent.
Maximum grade after, 0.75 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

NOTE.—On account of trunk sewer construction, only part of the River road was improved from Station 117 + 32.8 to 83 + 10.8.

GARWOOD FERGUSON,
Engineer.
JOHN McMULLEN,
Inspector.

Midvale and Greenwood Lake Road, 2.321 Miles Long.

This is an extension of the improvement of the highway which begins at the old Pompton Turnpike and extends northward along the Wanaque River toward Greenwood Lake. The present improvement begins at the macadam laid two years ago to the Pompton Township line, and extends westward through West Milford Township to the road leading to the town of West Milford.

The road is graded to a width of twenty-eight feet, sixteen feet of which are paved with macadam six inches deep. The soil over which it is built is a heavy glacial drift full of large boulders. An idea of the amount of work necessary to reduce the maximum grade from nine per cent. to five per cent. may be gleaned from the fact that over 21,000 cubic yards of material was excavated in the course of the improvement.

The road is now improved to within three-quarters of a mile of the southern end of Greenwood Lake, thus giving the residents of Paterson, Newark and all of the region south and east a firm smooth highway almost to this beautiful sheet of water.

Detailed statement of the cost of the Midvale and Greenwood Lake road, township of West Milford, county of Passaic. Total length, 12,256.5 feet, or 2.321 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 12,045 feet.
Depth of stone-bed, 6 inches.

Type B, 21,552 square yards, at 48 cents; total,	\$10,344 96
Earth excavation, 21,233 cubic yards, at 46 cents; total,	9,767 18
Dry wall, 252 cubic yards, at \$3.50; total,	882 00
Drain, 100 lineal feet, at 40 cents; total,	40 00
6 4-inch standard concrete culverts, at \$160.00; total,	960 00
12-inch corrugated pipe, 160 lineal feet, at \$2.00; total,	320 00
Cobble stone gutter, 1,002 square yards, at 50 cents; total,	501 00
Concrete retaining wall, 125 cubic yards, at \$7.00; total,	875 00
Total,	\$23,690 14

Inspection,	\$1,005 70
Engineering,	925 00
Extras, paid by county,	2,501 82
Total cost of road,	\$28,122 66
Lump sum, contract price,	\$26,576 32
Total allowed by the State,	\$23,690 14
One third of above amount paid by the State,	7,896 71
Maximum grade before,	9 per cent.
Maximum grade after,	5 per cent.

GARWOOD FERGUSON,
Engineer.
 T. P. TERHUNE,
Inspector.

SALEM COUNTY.

Woodstown Road, .459 Mile Long.

This improvement begins at the bridge over Salem Creek and extends through the borough of Woodstown to the West Jersey and Seashore Railroad. It is an extension of the main road from Salem to Woodstown through the borough to the railroad station.

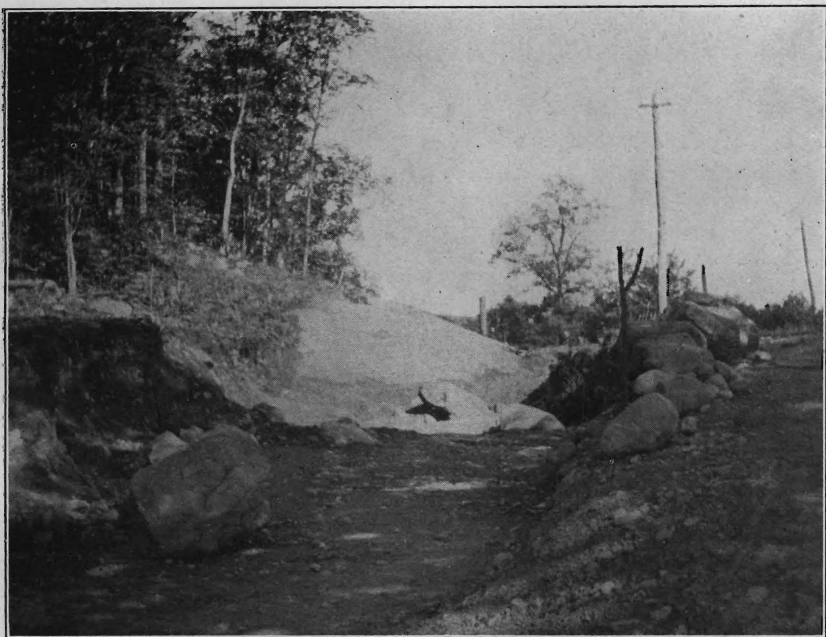
The graded width varies from thirty-seven to forty-four and five-tenths feet; the width of the pavement is from thirty-four to forty-one and one-half feet. This pavement is of cold mixed asphalt concrete upon a macadam base and has a total thickness of seven inches.

Owing to the fact that the old road started from the old bridge and climbed a sharp hill into the town, the county deemed it wise to construct a new bridge much higher than the old one. This, in conjunction with the grading, reduced the maximum grade from 7.27 per cent. to 2.50 per cent.

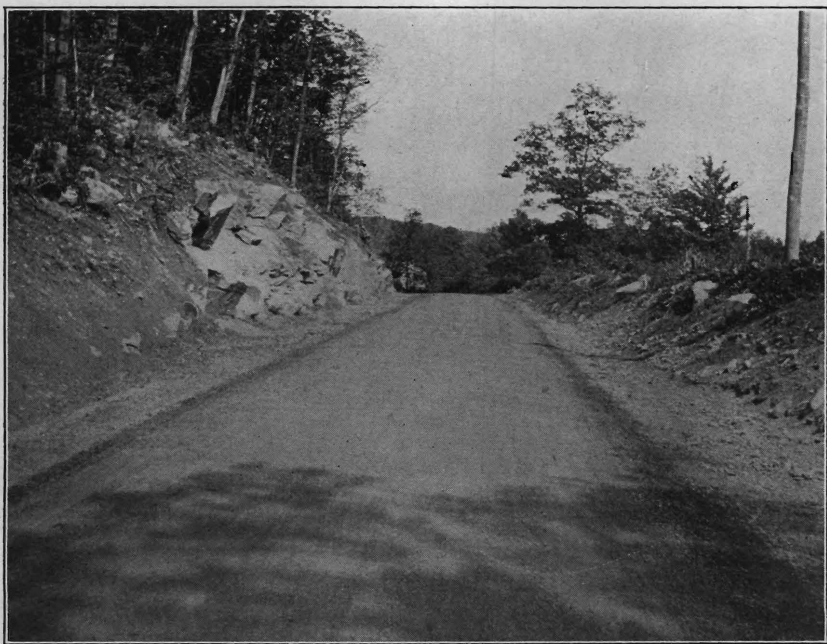
Detailed statement of the cost of the Woodstown road, borough of Woodstown, county of Salem. Total length, 2,424 feet, or 0.459 miles.

Kind of pavement, asphalt concrete.
 Width of paved way, 34' to 41.5 feet.
 Length of paved way, 2,424 feet.
 Depth, 7 inches.

Surface, type H, 10,191 square yards, at \$1.29; total,	\$13,146 39
Earth excavation, 3,507 cubic yards, at 30 cents; total,	1,052 10
Extras:	
Surface, type H, 218.22 square yards, at \$1.29; total,	281 50
	<hr/>
	\$14,479 99



Midvale and Greenwood Lake Road, Passaic County, During Construction.



Midvale and Greenwood Lake Road, Passaic County, After Improvement.

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Lump deductions agreed upon for defective work,	\$1,000 00
Inspection,	\$13,479 99
Engineering,	366 00
	198 62
Total cost of road,	\$14,044 61
Lump sum, contract price,	\$14,198 49
Amount allowed by State,	\$12,576 55
One-third of above paid by State,	4,192 18
Maximum grade before,	7.27 per cent.
Maximum grade after,	2.50 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

H. B. KEASBY,
Engineer.
 J. WILBERT SHARP,
Inspector.

Shirley—Deerfield Road, .808 Mile Long.
 Pennsville—Penns Grove Road, 5.508 Miles Long.
 Alloway—Quinton Road, 2.928 Miles Long.
 Hancock's Bridge—Canton Road, 4.837 Miles Long.

These were old shell and gravel roads which had been improved by the townships and have been taken over by the county and are now being improved by it under State supervision, and included in our mileage for the fiscal year, 1913.

SOMERSET COUNTY.

South Branch Road, .446 Mile Long.

This construction begins at the South Somerville-Belle Mead road and extends westerly along the bluff on the southerly side of the Raritan River, crossing the South Branch Railroad, and to the present macadam road which passes Mr. Duke's magnificent property.

There were only slight changes in alignment and a like change in grade, the maximum being reduced from 6.2 per cent. to 5 per cent.

The chief value of this road lies in the fact that it furnishes a connection between the main highway and the local roads which have been so finely improved by Mr. James B. Duke at his own expense.

The road is improved to a width of thirty feet and paved to a width of twenty feet, with a depth of six inches to correspond with the roads of which it is an extension.

Detailed statement of the cost of the South Branch road, township of Hillsborough, county of Somerset. Total length, 2,353 feet, or 0.446 mile.

Kind of pavement, Type A Surface, foundation C.

Width of paved way, 20 feet.

Length of paved way, 2,353 feet.

Depth, 6 inches.

Surface, type A; foundation, type C, 5,445 square yards, at 70 cents; total,	\$3,811 50
Earth excavation, 792.2 cubic yards, at 40 cents; total,	316 88
Extra embankment, 165 cubic yards, at 50 cents; total,	82 50
Under drain, 100 lineal feet, at 20 cents; total,	20 00
Gutter, type cobble stone, 16 square yards, at 75 cents; total, ..	12 00
14-inch cast-iron pipe, 84 lineal feet, at \$1.50; total,	126 00
3 catch basins, at \$40.00; total,	120 00
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Inspection,	\$4,488 88
Engineering,	150 00
	<hr/>
Total cost of road,	\$4,863 32
	<hr/>
Lump sum, contract price,	\$4,488 80
Amount allowed by State,	4,863 32
	<hr/>
Forty per cent. of above, State's share,	\$1,945 33
Less credit by cost of inspection already paid by State,	150 00
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Amount due by State,	\$1,795 33
	<hr/>
Maximum grade before,	6.2 per cent.
Maximum grade after,	5. per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

F. J. HUBBARD,
Township Engineer.
JOHN J. MACKENZIE,
Inspector.

Liberty Corner Road, First Section, 2.032 Miles Long.

This improvement begins at the end of the macadam near Grant Schley's, the same being the intersection of the road from Far Hills with the road leading to VanDerveer's Mills, and extends easterly to the end of the new macadam road in Liberty Corner.

The graded width of this road is thirty-three feet while that of the stone pavement is fourteen feet and its depth ten inches.

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The old alignment of this road was very crooked, seeming to be, in fact, made up of a series of roads running from one farmhouse to another. It was, therefore, necessary to leave the old road at two points and follow a new line for quite a distance.

The completion of this improvement connects the improved roads of Essex and Union counties with the roads of western Somerset. As this road follows Moggy Hollow, a gap through the mountains, it furnishes a main ingress and egress to the northern portion of Somerset county over much easier grades than was heretofore possible.

Although this road followed the line of least grade resistance it was found necessary to reduce the maximum grade from 11 per cent. to 6 per cent.

Detailed statement of the cost of the Liberty Corner road, first section, township of Bernards, county of Somerset. Total length, 10,728 feet, or 2.032 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 10,728 feet.
Depth of stone-bed, 10 inches.

4-inch macadam, 905 square yards, at 66 cents; total,	\$597 30
Telford, 16,688 square yards, at 90 cents; total,	15,019 20
Excavating brook channel, 689.7 cubic yards, at 58 cents; total, ..	400 00
Earth excavation, 29,602 cubic yards, at 45 cents; total,	13,320 90
Rock excavation, 715 cubic yards, at \$1.80; total,	1,287 00
Drain, 4,754 lineal feet, at 20 cents; total,	950 80
Drainage pipe:	
468 feet 12-inch T. C. pipe, at 35 cents per foot,	163 80
318 feet 15-inch T. C. pipe, at 41 cents per foot,	130 38
126 feet 24-inch T. C. pipe, at 98 cents per foot,	123 48
182 feet (14,242 pounds 12-inch C. I. pipe,) at \$0.0175 per lb.,	249 23
18 feet (2,935 pounds 15-inch C. I. pipe) at \$0.0175 per lb.,	51 36
Labor laying above pipe,	710 42
Plus difference between items and lump sum,	303 50
Cobble-stone gutter, 1,167 square yards, at \$1.00; total,	1,167 00
Total,	\$34,474 37
Inspection,	807 00
Engineering,	1,442 25
Extras, paid by county for right of way,	850 00
Total cost of road,	\$37,573 62
Lump sum, contract price,	24,839 96
Total allowed by the State,	\$34,474 37
One-third of above amount paid by the State,	11,491 46
Maximum grade before,	11 per cent.
Maximum grade after,	6 per cent.

JOSHUA DOUGHTY, JR.,
Engineer.

S. S. BALDWIN,
Inspector.

Plainville Road, 2.56 Miles Long.

This road begins at the Philadelphia and Reading Railway, crossing opposite the improved road to Skillman, and extends northerly, through Plainville, to the end of the old macadam from Belle Mead. It is the last link in the line of improved roads between Somerville and Trenton, by way of Blawenburg, Hopewell and Pennington. Its advantage over the Princeton, Kingston, Rocky Hill route lies in the fact that there are no mountains or hills along the line and that the alignment of the road is also much better.

The roadway was graded to a width of thirty-three feet upon which stone was placed for a width of fourteen feet and a depth of ten inches.

Owing to the fact that the road was built over a heavy wet soil, the underdraining cost nearly as much as the grading.

The change wrought in this road by its improvement is most marked, and a road that formerly was so bad during the winter and spring that it was almost impassable, is now smooth, hard and convenient for travel at all seasons of the year.

The change in maximum grade was only from four per cent. to two per cent., but was of much more value than these figures would indicate, as this change in grade permitted the draining of several low wet spots which seriously damaged the road.

Detailed statement of the cost of the Plainfield road, township of Montgomery, county of Somerset. Total length, 13,515 feet, or 2.560 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 13,515 feet.

Depth of stone-bed, 10 inches.

Macadam, 4-inch, 379.58 square yards, at 50 cents; total,	\$189 79
Telford, 21,355.50 square yards, at 81 cents; total,	17,297 96
Earth excavation, 15,450.88 cubic yards, at 40 cents; total,	6,180 35
Drain, 19,218 lineal feet, at 20 cents; total,	3,843 60
2,259 feet 6-inch tile, at 45 cents; total,	1,016 55
750 feet ditching at 12 cents; total,	90 00
Total,	\$28,618 25
Inspection,	807 00
Engineering,	445 59
Extras, paid by county, for bridges and culverts,	1,594 25
Total cost of road,	\$31,465 09
Lump sum, contract price,	\$24,389 93
Total allowed by the State,	\$28,618 25
One-third of above amount paid by the State,	9,539 42



Plainville Road, Somerset County, Before Improvement.



Plainville Road, Somerset County, After Improvement.

COMMISSIONER OF PUBLIC ROADS.

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Maximum grade before,	4 per cent.
Maximum grade after,	2 per cent.

JOSHUA DOUGHTY, JR.,
*Engineer.*JEFFERSON D. CRAY,
Inspector.

SUSSEX COUNTY.

Newton-Stanhope Road, 9.087 Miles Long.

This improvement is a continuation of the old macadam road built from Stanhope to Lockwood, and extends from the end of this macadam to the town line of Newton, the county seat of Sussex county.

Owing to the fact that the road as originally surveyed crossed the Newton branch of the Lackawanna Railroad at grade, at two points about 3,500 feet apart, the Lackawanna Railroad agreed to grade a new line along its right of way at its own expense. In consideration of the fact that this was a manifest advantage to the road, their offer was accepted, and the portion of the road above referred to was eliminated from the original contract, and was later improved under the name of the White Hall Section.

Owing to the rocky, mountainous nature of the country, the road was only improved to a width of twenty-four feet through the heavy rock cuts. An idea of the obstacles encountered and overcome may be had from the fact that the maximum grade was reduced from eighteen per cent. to five and one-half per cent.

The value of this road to Sussex county is almost beyond computation, running as it does through a rough, mountainous region into the finest grazing section in the State of New Jersey, a section whose rich grass and pure water made Orange county butter famous. Strange as it may seem, the finest Orange county butter is produced in Sussex county, but as it was shipped over the Erie Railroad from Orange county stations it was known to the New York trade as Orange county butter.

This section of the State contains some of the finest mountain scenery and beautiful small lakes to be found anywhere in the East.

The pavement of this road was laid to a minimum width of fourteen feet and to a depth of not less than seven inches. This macadam was treated with heavy asphaltum oil, giving the people of that region a smooth, hard and comparatively dustless highway.

TWENTIETH ANNUAL REPORT

Detailed statement of the cost of the Newton-Stanhope road, townships of Andover and Byram and Andover borough, county of Sussex. Total length, 47,979 feet, or 9.087 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 47,979 feet.
Depth of stone-bed, 7 inches.

Type C, 74,437 square yards, at about 56 + cents; total,	\$41,686 83
Earth excavation, 36,528 cubic yards, at 40 cents; total,	14,611 20
Earth excavation (outside of road), 330 cubic yards, at 45 cents; total,	148 50
Rock excavation, 10,315½ cubic yards, at \$2.19; total,	22,590 94
Drain, 486 lineal feet, at 20 cents; total,	97 20
Retaining walls, 196⅓ cubic yards, at \$1.23; total,	241 49
Catch basins, 6, at \$2.24; total,	13 44
12-inch C. I. pipe, 708 lineal feet, at \$1.44; total,	1,019 52
15-inch C. I. pipe, 108 lineal feet, at \$2.51; total,	271 08
18-inch C. I. pipe, 24 lineal feet, at \$3.80; total,	182 40
Plus difference between items and lump sum bid,	930 00
Total,	\$81,792 60
Inspection,	3,358 00
Engineering,	2,680 00
Extras, paid by county,	3 00
Total cost of road,	\$87,833 60
Lump sum, original and supplemental contract price,	\$73,636 06
Total allowed by the State,	\$81,792 60
One-third of above amount paid by State,	27,264 20
Maximum grade before,	18 per cent.
Maximum grade after,	5½ per cent.

A. H. KONKLE,
Engineer.
JOB J. SHAW,
Inspector.

Newton—Stanhope Road, White Hall Section, .673 Mile Long.

This is the section referred to in the preceding description, and is built through a solid rock cut, which at some points is over fifty feet deep, the maximum grade of which was twenty-eight per cent., which has now been reduced to five.

Its value over the old road is that the line is much straighter, and that two bad railroad crossings are avoided.

The graded width of the roadway was twenty-four feet. The width of the pavement is fourteen feet and its depth seven inches. This pavement is macadam treated with heavy asphaltum oil by the penetration process.

COMMISSIONER OF PUBLIC ROADS.

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Detailed statement of the cost of the Newton-Stanhope road, White Hall section, township of Byram and borough of Andover, county of Sussex. Total length, 3,554 feet, or 0.673 mile.

Kind of pavement, type C.
Width of paved way, 14 feet.
Length of paved way, 3,554 feet.
Depth, 7 inches.
Width between slopes or curbs, 24 feet.

Foundation, type C, 5,529 square yards, at 58 cents; total,	\$3,206 82
Surface, type C, 5,529 square yards, at 58 cents; total,	3,206 82
Earth excavation, 900 cubic yards, at 50 cents; total,	450 00
Under drain, type 6-inch tile, 60 lineal feet, at 45 cents; total, ..	27 00
Extras:	
12 tons 1½-inch stone, at \$2.00; total,	24 00
3 tons ¾-inch stone, at \$2.00; total,	6 00
	<hr/>
	\$6,920 64
Less 5 per cent., as per contract,	\$6,574 61
Inspection,	186 00
Engineering,	218 53
	<hr/>
Total cost of road,	\$6,979 14
	<hr/>
Lump sum, contract price,	\$6,522 84
	<hr/>
Amount allowed by State,	\$6,574 61
One-third of above, State's share,	2,191 54
	<hr/>
Maximum grade before,	28 per cent.
Maximum grade after,	5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

HARRY SNOOK,
Engineer.
CHARLES W. ROOF,
Inspector.

Hamburg—Sussex Road, 2.868 Miles Long.

The improvement of this road begins at the new concrete bridge over the Walkill river and extends northerly to the Sussex borough line. It connects the improved roads of Hardy-township with the improved streets of Sussex.

In order to reduce the grade and at the same time improve the alignment of the road, a new right of way was opened near the southern end of this job. The old road presented one of those peculiar features often observed in our old country highways, namely, it deviated from a direct line, in fact seemed to

go out of its way in order to climb a steep knob for no apparent purpose except to climb down again directly on the other side. The road as improved shows a reduction in maximum grade from $12\frac{1}{2}$ per cent. to 5 per cent. The alignment was further improved at a point just beyond that referred to by carrying the road in a direct line across a small piece of swamp land.

The width of the roadway is twenty-four feet and that of the macadam fourteen feet with a depth of seven inches. This macadam was treated with a coat of heavy asphaltum oil applied by the penetration method.

Detailed statement of the cost of the Hamburg-Sussex road, township of Wantage, county of Sussex. Total length, 15,142 feet, or 2.868 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, exclusive of bridges, 15,098 feet.

Depth of stone-bed, 7 inches.

Type C, 23,485 $\frac{7}{8}$ square yards, at 68 cents; total,	\$15,970 33
Earth excavation, 18,429 cubic yards, at 38 cents; total,	7,003 02
Earth excavation, outside of road, 315 cubic yards, at 60 cents; total,	189 00
Rock excavation, 1,295 cubic yards, at \$1.50; total,	1,942 50
12-inch corrugated pipe, 226 lineal feet, at \$1.50; total,	339 00
16-inch corrugated pipe, 172 lineal feet, at \$2.00; total,	344 00
20-inch corrugated pipe, 146 lineal feet, at \$2.50; total,	365 00
Total,	\$26,152 85
Inspection,	523 50
Engineering,	985 00
Extras, paid by county:	
Collars for connections on extensions of pipes,	\$11 00
Taking up and relaying pipes,	34 10
Extra grading on new concrete bridge,	18 70
Extra macadam at entrance of cemetery,	11 33
	75 13
Total cost of road,	\$27,736 48
Lump sum, contract price,	\$25,451 77
Total allowed by the State,	\$26,152 85
One-third of above amount paid by the State,	8,717 62
Maximum grade before,	12 $\frac{1}{2}$ per cent.
Maximum grade after,	5 per cent.

A. H. KONKLE,
Engineer.
 E. WILLIS CLARK,
Inspector.



Chestnut Street, Borough of Roselle Park, Union County, South from
Clay Avenue, Before Improvement.



Chestnut Street, Borough of Roselle Park, Union County, South from
Clay Avenue, After Improvement.

COMMISSIONER OF PUBLIC ROADS.

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UNION COUNTY.

Chestnut Street, Roselle Park, .686 Mile Long.

This improvement was made by the borough of Roselle Park under the provisions of the State Aid act and extends from Westfield avenue, through the main business street of Roselle Park, to Summer avenue.

The width of the improvement is thirty-eight feet, all of which is paved; the depth of this pavement, which is of concrete, varies from six to eight inches. On the concrete pavement thus laid a heavy coat of tar was spread, which latter was covered with a heavy coat of sand and the whole thoroughly rolled.

The maximum grade was decreased from 4.2 per cent. to 1.9 per cent.

The portion of the pavement to which the State contributes its share is twenty-four feet.

In addition to the pavement above referred to a concrete storm water drain, two feet by three feet three inches, was constructed, into which pipes varying in size from ten inches to twenty-four inches in diameter were led. This drainage was made necessary by the very wet condition of the soil.

Detailed statement of the cost of Chestnut street, Roselle Park, county of Union. Total length, 3,622 feet, or 0.686 mile.

Kind of pavement, concrete, bituminous top.

Width of paved way (24 feet State and borough), 38 feet.

Length of paved way, 3,594.5 feet.

Depth, 6 inches.

Width between slopes or curbs, 38 feet.

Foundation, type AAA (concrete), 1,771.4 cubic yards, at \$6.70; total,	\$11,868 38
Surface, type J, 10,513 square yards, at 33 cents; total,	3,469 29
Surface, type A (Driveways), 76 square yards, at 60 cents; total, ..	45 60
Earth excavation, in road, 4,227 cubic yards, at 50 cents; total, ..	2,113 50
Excavation, outside road, 522 cubic yards, at 60 cents; total,	313 20
Under drain, type tile, 859 lineal feet, at 30 cents; total,	257 70
Under drain, type French, 455 lineal feet, at 35 cents; total,	159 25
Foreign material for subgrade, 8 cubic yards, at \$1.00; total,	8 00
Sub-base for foundation AAA, 130 cubic yards, at \$2.00; total, ..	260 00
Header curb, 473.7 lineal feet, at 50 cents; total,	236 85
Retaining walls, concrete, 21.9 cubic yards, at \$10.00; total,	219 00
Excavation, brick masonry, old bridge near Williams street, lump sum,	30 00
	<hr/>
	\$18,980 77
Inspection,	363 00
Engineering,	1,191 10
	<hr/>
	\$20,534 87

Extras paid entirely by borough:

Excavation, pavement,, curbing sidewalks, etc.,..	\$14,920 61	
Engineering and inspection,	816 15	
		<hr/> \$15,736 76
Total cost of road,		<hr/> \$36,271 63
Lump sum, contract price,		\$18,438 61
Amount allowed by State,		20,534 87
Forty per cent. of above, State's share,		\$8,213 95
Less credit by cost of inspection already paid by State,		363 00
		<hr/>
Amount due by State,		\$7,850 95
Maximum grade before,	4.2 per cent.	
Maximum grade after,	1.9 per cent.	

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

J. WALLACE HIGGINS,
Engineer.

JOHN WILSON,
Inspector.

Detailed statement of the cost of the storm water drain in Chestnut street, in the borough of Roselle Park, county of Union.

2' x 3' 3" concrete sewer, 356 lineal feet, at \$2.65; total,	\$943 40
24-inch pipe sewer, complete, 782.5 lineal feet, at \$1.86; total,....	1,455 45
20-inch pipe sewer, complete, 449 lineal feet, at \$1.74; total,....	781 26
18-inch pipe sewer, complete, 30 lineal feet, at \$1.26; total,....	37 80
15-inch pipe sewer, complete, 55 lineal feet, at \$1.10; total,....	60 50
12-inch pipe sewer, complete, 208 lineal feet, at 83 cents; total,	172 64
10-inch pipe sewer, complete, 121 lineal feet, at 79 cents; total,	95 59
Manholes, brick, 2, at \$40.00; total,	80 00
Manholes, special concrete, 1, at \$30.96; total,	30 96
Catch basins, brick, 6, at \$45.00; total,	270 00
Receiving basins, 2, at \$45.00; total,	90 00
Inlets, 15, at \$20.00; total,	300 00
	<hr/>
	\$4,317 60

Force account work as provided for in clause "Sewer, Water and Gas Connections" of contract:

Material and labor for changing gas and service:	
29½ hours plumber, at 65 cents,	\$19 18
7 hours plumber helper, at 25 cents,	1 75
Iron pipe and fittings,	18 46
	<hr/>
	\$39 39

Material and labor for changing sewer connections:

374 feet of 4-inch pipe, including specials,	\$30 64
Cement, sand, etc.,	1 00
576 hours' labor, at 22½ cents,	129 60
92 hours skilled labor, at 30 cents,	27 60
30 hours foreman, at 40 cents,	12 00
	<hr/>
	200 84

\$240 23

Contractor's profit, 10 per cent.,	24 02
	<hr/>
	264 25

Total contract, \$4,581 85



Chestnut Street, Borough of Roselle Park, Union County, North from Grant Avenue, Before Improvement.



Chestnut Street, Borough of Roselle Park, Union County, North from Grant Avenue, After Improvement.

COMMISSIONER OF PUBLIC ROADS.

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Inspection,	\$185 00
Engineering,	229 09
Total cost of sewer,	<u>\$4,995 94</u>
Lump sum, contract price,	\$4,300 00
Total allowed by the State,	\$4,995 94
Forty per cent. of above, amount paid by the Statee,	1,998 38

J. WALLACE HIGGINS,

Engineer.

WILLIAM F. MESSERSMITH,

*Inspector.***Springfield Avenue, or Seven-Bridge Road, 1.766 Miles Long.**

This reconstruction begins at Morris avenue, in Springfield, and extends across the low, swampy land to the Essex county line.

Owing to the low nature of the land and the many streams crossing the road there are seven bridges within a distance of less than one mile.

This road was improved some years ago by the county, but owing to the wet nature of the land upon which it had been built the road was in very bad condition because of the almost numberless deep holes in the old stone pavement.

The old embankment was also found to be too narrow to accommodate the present-day travel. It was, therefore, widened to thirty and thirty-six feet, and the stone bed was also increased to eighteen and twenty feet in width; on this was spread cold-mixed asphaltic concrete to a depth of three inches and a width of eighteen feet.

The wisdom of the county in making this extensive improvement is now conceded by all and the road itself is as fine a piece of work as can be found anywhere in the State.

The maximum grade was unchanged.

Detailed statement of the cost of Springfield avenue, townships of Springfield and Union, county of Union. Total length, 9,325 feet, or 1.766 miles.

Kind of pavement, type O and type H.

Width of paved way, 18 and 20 feet.

Length of paved way, 9,325 feet.

Depth, 8 inches.

Foundation, type C, 2,550 square yards, at 60 cents; total,	\$1,530 00
Surface, type O, 4,465 square yards, at 45 cents; total,	2,009 25
Surface, type H, 11,195 square yards, at \$1.23; total,	13,769 85
Surface, type H, 4,248 square yards, at \$1.27; total,	\$5,394 96
Earth excavation, 1,754 cubic yards, at 55 cents; total,	964 70
Gutter, type Belgian block, 83.3 square yards, at \$2.00; total,	166 60

Gutters, clean and scraped, 11,250 lineal feet; at 3 cents,	\$337 50
Extension of bridge at station 47 + 47,	628 05
Sand for type H surface, 85 tons, at \$2.00; total,	170 00
Crushed stone, 2,604.5 tons, at \$2.00; total,	5,209 00
Oil for type O surface, 5,000 gallons, at 8½ cents; total,	425 00
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Inspection: County, \$39.00; State, \$111.00,	\$30,604 91
Engineering,	150 00
	<hr/>
Total cost of road,	1,530 25
	<hr/>
Lump sum, contract price,	\$32,285 16
	<hr/>
Amount allowed by State,	\$29,852 81
	<hr/>
Forty per cent. of above, State's share,	\$32,285 16
Less credit by cost of inspection already paid by State,	\$12,914 06
	<hr/>
Amount due by State,	111 00
	<hr/>
	\$12,803 06
Maximum grade before,	3.5 per cent.
Maximum grade after,	3.5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

J. L. BAUER,
Engineer.
 HENRY J. SCHMITT,
Inspector.

Morris Avenue, 2.917 Miles Long.

This is a portion of the old Morris turnpike between Elizabethtown and Morristown. The portion improved under this contract begins at the Elizabeth city line and extends to Stuyvesant avenue in the town of Union.

This is, properly speaking, a re-surfacing job and therefore the maximum grade remains unchanged.

The roadway was improved to a width of from thirty to thirty-six feet, and over the old stone pavement a sheet of cold-mixed asphaltic concrete was spread to a width of sixteen feet and to a depth of at least three inches. The outer edges of this pavement were further protected with crushed stone and tar.

Detailed statement of the cost of Morris avenue, township of Union, county of Union. Total length, 15,403 feet, or 2.917 miles.

Kind of pavement, type H.

Width of paved way, 16 feet.

Length of paved way, 15,403 feet.

Depth, 3 + inches.

Width between slopes or curbs, 30 to 36 feet.

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Foundation, crushed stone, 3,733 tons, at \$2.00; total,	\$7,466 00
Surface, asphalt concrete, 28,042 square yards, at \$1.08; total,	30,286 01
Surface, sand, 138.3 tons, at \$2.00; total,	276 60
Earth excavation, 1,730 cubic yards, at 55 cents; total,	951 50
Gutter, Belgian block, 398 square yards, at \$2.00; total,	796 00
Gutter, cobble stone, 58 square yards, at \$1.00; total,	58 00
Gutters cleaned and scraped, 15,000 lineal feet, at 4 cents; total, ..	600 00
Shoulders treated with tarvia and screenings, 26,646 lineal feet, at 2¼ cents; total,	599 53
15-inch tile drain, 150 lineal feet, at \$1.00; total,	150 00
Pipe furnished to connect gutters with culvert (Force account, \$39.05 + 15%),	44 91
5,000 gallons of Tarvia, at 8½ cents per gallon; total,	425 00
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	\$41,653 55
Inspection,	225 00
Engineering,	2,082 68
	<hr/>
Total cost of road,	\$43,961 23
	<hr/>
Lump sum, contract price,	\$41,747 54
	<hr/>
Amount allowed by State,	\$43,961 23
Forty per cent. of above, State's share,	17,584 49
Less credit by cost of inspection already paid by State,	225 00
	<hr/>
Amount due by State,	\$17,359 49
	<hr/>
Maximum grade before,	3.9 per cent.
Maximum grade after,	3.9 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

J. L. BAUER.

Engineer.

CONRAD HARTENSTEIN,

Inspector.

Shunpike Road, End Sections, 1.195 Miles Long.

This improvement covers both ends of the old Shunpike. The center portion, which is on top of the first Watchung mountain, consists of solid trap rock which is being blasted out by the quarry company near whose crusher the road runs. By permitting the quarry company to take out this stone the cost of removing the rock is reduced more than one-half.

The southern section, just completed, begins at Westfield avenue and extends northerly 5,100 feet to a point near the top of the mountain. The second section begins 1,568 feet north of the section just described and ends at Morris avenue, Summit. This second section is built over an entirely new right of way and further is carried underneath the tracks of the Rahway Valley railroad, thus eliminating another railroad grade crossing.

The maximum grade was reduced from 14 per cent. to $6\frac{1}{2}$ per cent. The width of the graded roadway is thirty-three feet, upon which is laid a water-bound macadam pavement sixteen feet wide and eight inches deep. Like all mountain roads the cost of the pavement is the smallest portion of the total cost, being \$8,903.25 on a total cost of \$23,773.31.

Detailed statement of the cost of the Shunpike road, end sections, township of Springfield, county of Union. Total length, 6,309.3 feet, or 1.195 miles.

Kind of pavement, macadam.	
Width of paved way, 16 feet.	
Length of paved way, 6,309.3 feet.	
Depth, 8 inches.	
Width between slopes or curbs, 33 feet.	
Foundation, type C, 11,871 square yards; Surface, type A, 11,871 square yards, at 75 cents; total,	\$8,903 25
Earth excavation, 13,872.5 cubic yards, at 50 cents; total,	6,936 25
Rock excavation, 1,658.4 cubic yards, at \$1.80; total,	2,985 12
Under drain, 4-inch tile, 187 lineal feet, at 30 cents; total,	56 10
Under drain, 4-inch tile underwalls, 150 lineal feet, at 45 cents; total,	67 50
Gutter, cobble, 1,577 square yards, at 80 cents; total,	1,261 60
Earth excavation outside road, 537 cubic yards, at 60 cents; total,	322 20
4-inch macadam driveways, 372 square yards, at 60 cents; total, ..	223 20
Concrete for retaining walls, 90 cubic yards, at \$8.00; total,	720 00
New cast-iron pipe, 232 lineal feet, at \$2.00; total,	464 00
Old cast-iron pipe reset, 84 lineal feet, at 20 cents; total,	16 80
Force account, removing trees, connecting water from spring with culvert, 3 runways and 1 inlet,	130 00
Crushed stone, 21.175 tons, at \$2.50; total,	52 94
Three driveways to new houses,	48 00
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	\$22,186 96
Inspection,	477 00
Engineering,	1,109 35
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Total cost of road,	\$23,773 31
	<hr/>
Lump sum, contract price,	\$20,507 25
Amount allowed by State,	23,773 31
	<hr/>
Forty per cent. of above, State's share,	\$9,509 32
Less credit by cost of inspection already paid by State,	477 00
	<hr/>
Amount due by State,	\$9,032 32
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Maximum grade before,	14.0 per cent.
Maximum grade after,	6.5 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

J. L. BAUER,

Engineer.

JOHN J. MACKENZIE,

Inspector.

COMMISSIONER OF PUBLIC ROADS.

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South Avenue, 1.003 Miles Long.

This is another improvement consisting of two sections separated by a third in the center. The reason for this omission lies in the fact that the Board of Chosen Freeholders experienced some difficulty in securing the necessary right of way to straighten the central portion. This they have now done and the central portion is graded, but will not be completed in time to be reported this year.

These three sections will give us a continuous, through, improved highway from Richmond street, in the city of Plainfield, to Broad street, in the town of Westfield. The present improvement includes a graded roadway from thirty-six to thirty-eight feet wide and a paved way nineteen feet wide; sixteen feet of this pavement is laid over the old telford road, the remaining three feet, or one and one-half feet on either side, forms a shoulder of macadam treated with hot tar. The asphaltic concrete is three inches in thickness after ultimate compression.

Only one marked change in grade was made where the maximum grade was reduced from 4.5 per cent. to 2.6 per cent. The reducing of this grade removes one of the most dangerous spots on South avenue. The combination of a sharp rise and a rather sharp curve led to the death of a man at this point. By cutting down this knoll anyone traveling over the road has a clear range of vision of over a quarter of a mile in either direction.

Detailed statement of the cost of South avenue, county of Union. Total length, 5,298 feet, or 1.003 miles.

Kind of pavement, type H.

Width of paved way, 19 feet.

Length of paved way, 5,298 feet.

Width between slopes or curbs, 36 to 38 feet.

Foundation, type C, 2,239.3 tons, at \$1.70; total,	\$3,806 81
Roadway, scarified, 4,400 lineal feet, at 10 cents; total,	440 00
Surface, type H, 11,333 square yards, at \$1.01; total,	11,446 33
Scraping gutters and shoulders, 9,800 lineal feet, at \$.025; total,	245 00
Earth excavation, 2,776 cubic yards, at 45 cents; total,	1,249 20
Sand, 117 tons, at \$1.70; total,	198 90
Gutter, type rubble, 285 square yards, at \$1.60; total,	456 00
Tarvia on wings, 1,766 square yards, at 30 cents; total,	529 80
New culverts, 3, at \$211; total,	633 00
New culvert,	259 00
New culvert,	257 00
New culvert,	237 00
New culvert,	418 00
Removing trees, rebuilding culverts:	
Force account,	\$53 12
Plus 15 per cent.,	7 97
	<hr/>
	61 09
	<hr/>
	\$20,237 13

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Inspection,	\$87 00
Engineering,	1,005 00
	<hr/>
Bridge work,	\$21,329 13
	416 00
	<hr/>
Total cost of road,	\$21,745 13
	<hr/>
Lump sum, contract price, including bridge work,	\$19,237 39
Amount allowed by State,	21,329 13
	<hr/>
Forty per cent. of above, State's share,	\$8,531 65
Less credit by cost of inspection already paid by State,	87 00
	<hr/>
	\$8,444 65
Twenty per cent., State's share of \$416 bridge work,	83 20
	<hr/>
Amount due by State,	\$8,527 85
	<hr/>
Maximum grade before,	4.5 per cent.
Maximum grade after,	2.6 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

J. L. BAUER,
County Engineer.
WILLIAM HAND,
Inspector.

Westfield Avenue Extension, .349 Mile Long.

This improvement was a cut-off from old Westfield avenue directly across the fields to a point near the old Springfield church on Morris avenue.

By the construction of this road three bad turns are eliminated and the through travel avoids the public school.

The road was graded to a width of forty feet; upon this a pavement eighteen feet wide and eight inches deep, consisting of a macadam base with a cold-mixed asphaltic concrete top, was laid. As this was a new line there was no change in the maximum grade.

Detailed statement of the cost of the Westfield avenue extension road, township of Springfield, county of Union. Total length, 1,841 feet, or 0.349 mile.

Kind of pavement, type H.	
Width of paved way, 18 feet.	
Length of paved way, 1,841 feet.	
Depth, 8 inches.	
Width between slopes or curbs, 40 feet.	
	<hr/>
Foundation, type "C", 3,761.5 square yards, at 65 cents; total,....	\$2,444 98
Surface, type "H", 3,939.5 square yards, at \$1.07; total,.....	4,215 27
Earth excavation, 553 cubic yards, at 50 cents; total,	276 50
Gutter, type cobble stone, 10 square yards, at \$1.00; total,.....	10 00

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Extra earth embankment, 5,688 cubic yards, at 80 cents; total,	\$4,550 40
12-inch cast iron pipe, 26 lineal feet, at \$2.00; total,	52 00
10-inch vitrified tile pipe, 131.82 lineal feet, at 55 cents; total,....	72 50
	<hr/>
Inspection,	\$11,621 65
Engineering,	267 00
	<hr/>
Extras paid by county,	\$12,875 57
	816 70
	<hr/>
Total cost of road,	\$13,692 27
	<hr/>
Lump sum, contract price, including bridge,	\$19,017 48
Amount allowed by State,	12,875 57
	<hr/>
Forty per cent. of above, State's share,	\$5,150 23
Twenty per cent. of \$7,300, bridge work, State's share,	1,460 00
	<hr/>
	\$6,610 23
Less credit by cost of inspection already paid by State,.....	267 00
	<hr/>
Amount due by State,	\$6,343 23
	<hr/>
Maximum grade before,	2.74 per cent.
Maximum grade after,	2.74 per cent.

We hereby certify that the above road is finished in all respects in strict compliance with the plans and specifications.

J. L. BAUER,
Engineer.
 HENRY J. SCHMITT,
Inspector.

Cost of Repairs.

In compliance with chapter 113, P. L. 1906; amended chapter 235, P. L. 1909; amended chapter 225, P. L. 1910; also amended chapter 395, P. L. 1912; further amended chapter 317, P. L. 1913, money from the motor vehicle fund, during the fiscal year from November 1st, 1911, to October 31st, 1912, has been sent to the various authorities for repairs on the following roads:

<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Absecon-Chestnut Neck road,	Atlantic,	\$2,000 00
Adelphia-Southard-Lakewood road,	Monmouth,	500 00
Alloway-Quinton road,	Salem,	2,500 00
Atlantic Highlands road,	Monmouth,	6,616 57
Ballinger's Mill and Piper's Corner road,	Burlington,	2,832 00
Belleville turnpike,	Hudson,	5,600 00
Belleville turnpike,	Hudson,	2,200 00
Bernards township,	Somerset,	200 00
Bernardsville-Far Hills-Belle Mead-Somerville road,	Somerset,	200 00
Bridgeton to Greenwich P. O. road,	Cumberland, ..	500 00
Bridgeton to Roadstown road,	Cumberland, ..	500 00
Bloomfield avenue,	Essex,	15,000 00
Broad street, Keyport,	Monmouth,	1,000 00
Broadway-Saddle River road,	Bergen,	1,686 43
Brunswick pike,	Mercer,	356 14
Bull's Ferry road,	Bergen,	500 00
Burlington pike,	Burlington, ...	26 92
Burlington pike,	Burlington, ...	1,005 53
Burlington to Camden county line road,	Burlington, ...	3,132 71
Cedar Cliff road,	Passaic,	2,000 00
Centreton pike,	Burlington, ...	58 92
Chamber's Corner road,	Burlington, ...	2,223 04
Chestnut Neck road,	Atlantic,	675 00
Chestnut Neck-Absecon-Egg Harbor road,	Atlantic,	6,751 27
Corlies avenue,	Monmouth,	1,500 00
Court House-Mays Landing road,	Cape May,	5,435 05
Cranbury-Plainsboro-Aqueduct road,	Middlesex,	1,000 00
Cranbury turnpike,	Middlesex,	2,000 00
Cranbury turnpike,	Middlesex,	150 00
Cranbury turnpike,	Middlesex,	211 50
Crown Point road,	Gloucester, ...	1,500 00
Crown Point road,	Gloucester, ...	500 00
Dayton-Monmouth Jct.-Kingston road,	Middlesex,	1,500 00
Eatontown-Long Branch road,	Monmouth,	1,000 00
Eatontown-Red Bank road,	Monmouth,	3,000 00
Edgewater road,	Bergen,	600 00

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<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Edinburgh-Dutch Neck-Princeton road,	Mercer,	\$500 00
Edinburgh-Windsor-Hightstown road,	Mercer,	2,000 00
Egg Harbor-Absecon road,	Atlantic,	4,878 74
Egg Harbor-Mays Landing road,	Atlantic,	2,000 00
Elizabeth avenue,	Union,	3,000 00
Farmingdale-Hamilton road,	Monmouth,	700 00
Flemington-Copper Hill road,	Hunterdon, ...	492 80
Franklin Furnace-Stockholm road,	Sussex,	310 00
Franklin Park road,	Middlesex,	1,000 00
Franklin turnpike, Mahwah,	Bergen,	325 00
Franklinville and Malaga road,	Gloucester,	3,500 00
Franklinville-Malaga-Cumberland County Line road,	Gloucester,	1,000 00
Freehold-Eatontown road,	Monmouth,	1,500 00
Freehold-Farmingdale road,	Monmouth,	1,000 00
Goffle road,	Passaic,	2,100 00
Hamilton avenue-Dogtown road,	Mercer,	1,000 00
Hammonton-Absecon road,	Atlantic,	3,500 00
Hasbrouck Heights road,	Bergen,	5,500 00
Highland Park-Metuchen road,	Middlesex,	3,000 00
Highland Park, Raritan avenue,	Middlesex,	2,500 00
Hightstown-Cranbury pike,	Mercer,	1,500 00
Hightstown-Manlapan road,	Mercer,	3,000 00
Hightstown-Manlapan road,	Mercer,	800 00
Highways through Salem City,	Salem,	500 00
Hudson County boulevard,	Hudson,	1,200 00
Hudson terrace-Englewood Cliffs road,	Bergen,	1,500 00
Lake View avenue,	Passaic,	5,000 00
Lakewood-Tom's River-Tuckerton road,	Ocean,	5,000 00
Lakewood-Tom's River-Tuckerton road,	Ocean,	9,000 00
Lakewood-Tom's River-Tuckerton road,	Ocean,	3,250 00
Lakewood-Tom's River-Tuckerton road,	Ocean,	643 31
Lambertville-Ringoes road,	Hunterdon,	1,500 00
Landing Bridge-Stelton road,	Middlesex,	2,000 00
Lawrenceville-Princeton road,	Mercer,	2,000 00
Lawrenceville-Princeton road,	Mercer,	8,545 72
Long Branch, Ocean avenue,	Monmouth,	5,000 00
Long Hill road,	Passaic,	4,000 00
Longport drive,	Atlantic,	19,057 94
Longport drive,	Atlantic,	620 99
Main street, Acquackanock township,	Passaic,	4,000 00
Main street, Butler,	Morris,	1,800 00
Main street, Elmer borough,	Salem,	500 00
Main street, South River, P. R. R. road,	Middlesex,	1,000 00
Malaga-Cumberland county line road,	Gloucester,	700 00
Manasquan-Belmar road,	Monmouth,	2,000 00
Market street,	Passaic,	5,000 00
Market street, Paterson,	Passaic,	5,200 00
Marshallville-Port Elizabeth-county line road,	Cape May,	500 00
Matawan-Freehold road,	Monmouth,	1,000 00
Mays Landing-Pleasantville road,	Atlantic,	1,657 55
Mays Landing-Pleasantville road (Glutrin),	Atlantic,	750 00
Mays Landing and Tuckahoe road,	Atlantic,	500 00
Meadow boulevard,	Atlantic,	1,200 00
Meadow boulevard,	Atlantic,	154 80
Medford-Main street,	Burlington,	300 00
Mendham to Bernardsville road,	Morris,	2,700 00
Mercerville-Allentown road,	Mercer,	3,000 00
Mercerville-Allentown road,	Mercer,	3,000 00

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<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Mercerville-Edinburgh road,	Mercer,	\$2,000 00
Mercerville-Edinburgh and Maple Shade School-house road,	Mercer,	2,342 28
Mercerville-Edinburgh and Maple Shade School-house road,	Mercer,	2,060 30
Metuchen-Iselin-Union county line road,	Middlesex,	2,000 00
Metuchen-Perth Amboy road,	Middlesex,	1,000 00
Metuchen-Perth Amboy road,	Middlesex,	2,000 00
Midvale road,	Passaic,	1,600 00
Midvale and Greenwood Lake road,	Passaic,	1,698 00
Millington to Basking Ridge road,	Somerset,	2,000 00
Mine Hill road,	Morris,	702 00
Mine Hill road, near Dover,	Morris,	700 00
Monmouth Beach road,	Monmouth,	1,500 00
Moorestown-Camden pike,	Burlington,	4,598 15
Morgan Station bridge approach,	Middlesex,	2,500 00
Morris avenue, Springfield,	Union,	1,852 22
Morris Plains-Littleton road,	Morris,	2,100 00
Morris turnpinke,	Morris,	1,876 58
Morris turnpinke,	Warren,	8,407 74
Morris turnpike, near New Village,	Warren,	5,200 00
Morristown to Green Village road,	Morris,	3,700 00
Mountain, Central and St. Georges avenue,	Union,	8,169 46
Mt. Holly-Moorrestown road,	Burlington,	822 64
Newark turnpike,	Hudson,	7,000 00
Newark turnpike,	Hudson,	5,000 00
Newark turnpike,	Hudson,	3,490 68
New Brunswick and Old Bridge turnpike,	Middlesex,	278 70
New Brunswick and Old Bridge turnpike,	Middlesex,	125 00
New Egypt road in New Egypt,	Ocean,	500 00
Norwood avenue, Long Branch, Asbury Park, ..	Monmouth,	3,000 00
Ocean avenue, Long Branch,	Monmouth,	10,000 00
Ocean Boulevard at Galilee,	Monmouth,	3,000 00
Park avenue, New Brunswick,	Middlesex,	2,676 40
Passaic avenue,	Passaic,	3,000 00
Passaic Valley road,	Morris,	9,500 00
Paterson and Hamburg turnpike,	Passaic,	340 00
Paterson and Hamburg turnpike,	Passaic,	880 00
Paterson and Hamburg turnpike,	Passaic,	6,000 00
Paterson and Hamburg turnpike,	Passaic,	6,272 00
Paterson Plank road and Newark turnpike,	Hudson,	12,900 00
Paulsboro-Swedesboro road,	Gloucester,	500 00
Pennington-Harbourton road,	Mercer,	500 00
Penns Grove-Pennsville road,	Salem,	2,000 00
Penns Grove-Pennsville road,	Salem,	3,000 00
Perth Amboy-South Amboy bridge,	Middlesex,	2,237 72
Perth Amboy-South Amboy bridge,	Middlesex,	2,333 52
Petersburg-Ocean City road,	Cape May,	3,451 30
Petersburg-Seaville road,	Cape May,	200 00
Phillipsburg to Belvidere road,	Warren,	2,000 00
Phillipsburg to Hackettstown road,	Warren,	4,000 00
Pleasantville-Mays Landing road (slag),	Atlantic,	445 12
Pleasantville-Mays Landing road,	Atlantic,	91 46
Port Elizabeth-Tuckahoe road,	Cumberland, ..	500 00
Port Norris-Mauricetown or Shiloh road,	Cumberland, ..	500 00
Princeton-Kingston road,	Mercer,	2,000 00
Reed Bank-Middletown-Keyport road,	Monmouth,	10,000 00
Red Bank-Middletown road,	Monmouth,	2,426 33

<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Ringoes-White House-Somerset County Line road,	Hunterdon, ...	\$3,000 00
River road,	Mercer,	3,000 00
River road,	Mercer,	2,000 00
Saddle River township, Broadway,	Bergen,	2,100 00
Sea Isle City road,	Cape May,	8,323 60
Seashore road, second section,	Cape May,	1,501 77
Seventh street,	Middlesex,	100 00
Shirley and Cumberland County Line road,	Salem,	1,000 00
South Amboy-Morgan Station-Keyport road, ...	Middlesex,	1,000 00
Springfield avenue,	Essex,	5,000 00
Springtown road,	Morris,	2,063 15
Springtown road, Washington township,	Morris,	200 00
St. George's avenue,	Middlesex,	800 00
St. George's avenue,	Union,	15,000 00
St. George's road,	Middlesex,	3,196 61
Stanhope-Newton road, first section,	Sussex,	2,000 00
Swedesboro road,	Gloucester,	500 00
Tom's River-Lakehurst road,	Ocean,	500 00
Trenton-Bordentown road,	Burlington,	549 14
Trenton-Lawrenceville road,	Mercer,	2,907 38
Tuckahoe-Petersburg road,	Cape May,	500 23
Trenton-Mercerville road,	Mercer,	1,500 00
Tuckerton-Ocean County Line road,	Ocean,	2,617 26
Trenton-Pennington-Woodsville road,	Mercer,	2,500 00
Trenton turnpike,	Middlesex,	1,161 12
Watchung road,	Morris,	424 80
Watchung road, section one,	Morris,	495 00
Watchung road, section two,	Morris,	495 00
Watchung road, section three,	Morris,	486 91
Watchung road, section four,	Morris,	486 91
Watchung road, section five,	Morris,	430 00
Watchung road, section six,	Morris,	474 36
Westfield avenue and South avenue,	Union,	11,978 32
Westville-Glassboro road,	Gloucester,	500 00
Westville-Cape May Court House road,	Gloucester and Cape May,	1,468 21
White Horse pike,	Atlantic,	360 26
White Horse pike,	Camden,	2,757 15
White Horse pike,	Atlantic,	9,739 34
White Horse road,	Mercer,	514 65
Woodbury-Court House road,	Gloucester and Cape May,	415 79
Woodbury and Knight's Run road,	Gloucester,	1,000 00
Woodbury-Salem road,	Gloucester,	1,145 65
Woodstown-Eldridge Hill to County Line road, ..	Salem,	1,000 00
Woodsville-Ringoes road,	Hunterdon,	1,500 00

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Repairs From County Funds During the Year 1913.

In some counties it is difficult to secure accurate returns, consequently the figures in this table are approximate only.

<i>County.</i>	<i>Amount.</i>
Atlantic,	\$42,579 99
Bergen,	110,799 38
Burlington,	30,800 03
Camden,	30,111 78
Cape May,	12,624 01
Cumberland,	1,879 55
Essex,	153,201 29
Gloucester,	14,000 00
Hudson,	309,506 00
Hunterdon,	22,343 20
Mercer,	86,552 29
Middlesex,	94,259 15
Monmouth,	114,030 99
Morris,	108,241 00
Ocean,	8,852 28
Passaic,	132,582 22
Salem,	10,000 00
Somerset,	34,222 42
Sussex,	9,655 89
Union,	111,917 00
Warren,	31,877 52
Total,	\$1,470,035 99

Ocean Highway.

Pursuant to the provisions of chapter 220, laws of 1910, the State Highway Commission has appropriated and made payments as follows:

	<i>Appropriation.</i>	<i>During 1910. Payments</i>	<i>During 1911. Payments</i>
For the improvement of a road along the bluff at Atlantic Highlands, conditioned upon the county expending a like amount,	\$10,000 00		
For filling in the head of Wesley Lake and the construction of a roadway between Ocean Grove and Ashbury Park,	5,700 00		\$5,700 00
For the acquisition of land and the opening up and improvement of the road known as the extension of Ocean avenue in the borough of Spring Lake, ..	4,300 00	\$4,312 90	
For the improvement of the road between Lakewood and Tom's River, ..	11,000 00	11,000 00	
For the improvement of the road between New Gretna and the Mullica River Bridge,	7,000 00	7,000 00	
For the straightening, widening and improvement of the road between Chestnut Neck and Absecon,	5,000 00	5,000 00	
For the improvement of the Main Shore road between Cape May Court House and Cape May, and the road between Petersburg and Seaville,	7,000 00		7,401 66
Amount appropriated,	\$50,000 00		
Amount expended during 1910, ..	.....	\$27,312 90	
Amount expended during 1911,		\$13,101 66
Amount expended during 1913,		6,616 57
Unexpended balance,		2,968 87

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REPORT.

The work done by the department during the current year is largely covered by the reports of the Division Engineers, of the Chemist to the Geological Survey and the Engineer in charge of right of way. The progress of the work of the department and the changes in its methods during the past three years are dealt with in the report of the State Highway Engineer.

The work of the department has increased very materially during the last three years, and both the office force and the office room are hardly adequate for the prompt and efficient transaction of the business. The taking over and administration of the State highway system will further increase the work devolving on the department and will make some increase in this respect necessary.

REVISION OF ROAD LEGISLATION.

The legislation covering the matter of roads is very voluminous. In the revision of 1895 it covers 154 pages. Since then numerous statutes have been passed, many of them amending or repealing sections of the previously existing law. The business of the department is hampered by the consequent necessity of frequent inquiries as to the law affecting any new proposal. A similar state of affairs exists in many States. It is suggested that this matter be referred to a commission, on which the Attorney-General's department should be represented, with instructions not only to codify and simplify the road law, but to revise and re-write the same.

METHOD OF ACCOUNTING.

Previous to the enactment of the revision of 1912 the cost of roads did not include the engineering and supervision. The change in the wording of the law in said revision and the inclusion of these items seemed to require the setting aside of a reserve over and above the contract price of the road to meet the cost of these items. The amount of this reserve was tentatively fixed by the Department as twenty per cent. of the cost

of the contract, allowance being made in this figure for such charges for extras and unforeseen contingencies as are found to arise in the carrying out of such work. This allowance has involved the setting aside of a considerably larger sum of money than was at first anticipated. The experience of the past year indicates that an allowance of fifteen per cent. would be sufficient for the purpose and the Department's system of accounting will be based upon this figure. It is to be borne in mind that the charges for extras can only be kept within reasonable bounds by proper preparatory and engineering work, involving careful consideration of all the factors involved in the construction that can be foreseen and allowed for in the design and in the contract based thereon. It is unquestionably better economy to avoid extras as far as possible even at the expense of increase in engineering charge.

STATE HIGHWAY SYSTEM.

The last Legislature passed an act directing the taking over of 500 miles of State Highway, Chapter 275, P. L. 1913. The appropriation, however, contemplated under this act was not included in the annual appropriation bill and therefore failed to become effective.

The condition of many of the roads included in the so-called blue routes is such that considerable work in the nature of reconstruction is necessary before they can be economically maintained. With the means at hand it was necessary to largely reduce the aid granted to the counties and municipalities for the maintenance of their roads if the money needed for this reconstruction were to be taken from the Road Fund.

A trained force capable of handling the work had to be recruited through civil service and organized. In the absence of such a force the risk of complete change in the method of handling the most important roads of the State was felt to be too great. Any failure would merely result in aggravating the condition that the State Highway act was designed to relieve. It was found impossible to hold the necessary examinations and get a report thereon before October.

A number of questions arose as to the legal location of the roads as distinguished from the actual location on the ground. Under the circumstances it was felt better to proceed carefully with the surveys and to gather the other necessary data, and not attempt to take over the physical control of the road without

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fuller information, more adequate means and a more thorough organization of the force.

It is the opinion of the Department that the work of actually taking over the State Highways should not be undertaken without an increase of about \$500,000.00 in the fund available for road work, including the cost of administering the Department.

MOTOR VEHICLE TRAFFIC.

As shown in the report of the Engineer of the Southern Division the amount of foreign motor vehicle traffic in this State is becoming a serious question. The county road mileage of the State, outside of city streets, is at present estimated at 15,000 miles. The motor vehicle registration is about 49,500 cars.

The motor vehicle registration of other states per mile of road is about as follows:

	<i>Road Miles.</i>	<i>Registration.</i>	<i>Motor Vehicles per Mile of Road.</i>
Connecticut,	15,000	22,124	1.5
Maryland,	15,595	15,895	1.
Massachusetts,	23,000	61,859	2.7
New York,	120,000	140,000	1.2
Ohio,	89,000	85,000	.95
New Jersey,	15,000	49,500	3.3

In France the motor vehicle registration for 1911 is about .3 per mile of road.

It is thus seen that our own registration is an unusually heavy one. A comparison of motor vehicle business for the year 1911, the last complete year before reciprocity was enacted, shows total motor vehicle receipts of \$385,165.00. If fifty per cent. be added to this figure to account for the increase in rate, the total becomes \$582,748.00. The receipts for the year ending October 31, 1913, were \$631,562.00. The difference between these latter figures is \$48,815.00, an increase of 8.4 per cent., or 4.2 per cent. a year. In other words, the increase in our local registration has about made good the loss in foreign registration due to the reciprocity act. The use of the roads, however, has been very materially increased on account of this act. This increase is not only in pleasure cars but also in delivery vehicles. The pleasure cars are mostly of the high powered type and the trucks of high load capacity. All of this traffic is of a destructive character to our roads.

CONVICT LABOR.

The detail of the work done in the northern and central divisions is given in the reports of the division engineers in charge. No such work has been done in the southern division.

There have been the usual difficulties of working under a new statute. While there has been a desire to secure co-operation between the departments involved, the divided responsibilities and duties are not conducive to efficiency. The Keeper and the Inspectors of the State Prison, and the Prison Labor Commission, are charged with certain responsibilities in regard to the care and discipline of the men. The Department of Public Roads must feed and house the men, direct their work and pay for their guarding, though the guards are not under the control of the department. It would simplify the work either to turn the men over entirely to the department and hold it responsible for their custody and discipline, as well as the feeding and housing, or turn the latter over to the prison authorities and limit the department to the employment of the men at a fixed rate per day for labor actually done on the roads. This matter is now receiving the attention of this department and the prison authorities. Some agreement will be reached which the Legislature will be asked to enact into a law.

It was originally supposed that the men would be paid for the work. This has not been done on account of a defect in the statute. In spite of this the men have worked well. There can be no question of the success of the experiment as far as the physical and moral welfare of the prisoners is concerned. Under conditions heretofore existing there has been no economy in their work. The expense for guards is considerable. The large expense for machinery and tools, for starting the camp, providing water, etc., have all had to be paid and charged to the work. These expenses are heavy. They represent an investment in plant that will not have to be repeated. The clerical force at the disposal of the department has not been sufficient to keep the detailed accounts necessary to show the costs properly chargeable to the units of actual work done. It is felt that if the work is to be fully successful, it must show at least no greater expense than work done by contract. That this result can be obtained under proper conditions seems, to this department, beyond reasonable doubt; in fact it is the judgment of everyone at all familiar with road work and with the work of the road gangs that these men are the best labor now available.

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I may add that the hours of labor are strictly limited to eight per day. The labor performed by the men, their snap and spirit are the best argument for such a limitation.

PROBLEMS OF ADMINISTRATION.

The road problem in this State presents many difficulties. The very large motor traffic, with the consequently severe stresses to which our roads are exposed, is in itself a serious problem. The extent to which a road is used is a measure of its value to the public, and the fact that our roads bear so heavy a traffic is the best witness to the popular need for them. The fact that the benefit accrues first to the individual and only indirectly, though none less actually, to the community at large, while the cost not only for construction but also for upkeep must be met by taxation, makes the problem of equitable financing a difficult one. The public authority makes the investment out of tax moneys and does not directly reap the commensurate return therefrom. It is in fact liable for further expense of keeping the road in repair. Furthermore, any equitable policy of road improvement at public expense must embrace a State wide system if justice is to be done to all.

We have about 15,000 miles of road outside of city streets. Of these about 4,500 miles have been hitherto improved. A balance of about 10,500 miles remains to be improved; about one-third of the latter are by-roads that will never become part of the main arteries of traffic. Many of our older roads, generally those improved before the State adopted the policy of State aid, have proven unequal to the loads now imposed upon them and have had to be practically rebuilt. Others, while probably safe enough for horse-drawn traffic, are far from being so for motor vehicles. Our bridges also are in many cases too light for modern loads and will have to be replaced by stronger designs.

All the experience of the past points to the wisdom and ultimate economy of spending public money only upon the best type of construction.

The demands on the moneys available under our present system will probably for years ever increasingly exceed the funds that can be spared for the purpose. In other words, while it is the utmost folly to build an inferior road, there is an ever growing demand for more roads than can be built with the funds at hand.

To meet these conditions the most careful husbanding of our resources is necessary. This can only be done by a thorough study of the question of what roads are the most urgently needed and how we are to get the money to pay for them. The road building programme for any year cannot be decided until the Legislature has made its appropriation.

The choice between roads proposed for improvement must, to a great extent, depend upon the means available. These means, under present conditions, cannot be known until well along in the year; hence, much valuable time is lost. In order to save further delay, the department is pressed to render an immediate decision, and, in many cases, it is expected to make these decisions without giving the time and consideration which the matter demands.

A policy under which the road work of the State can be deliberately planned for some years ahead is desirable.

The department is now asking the various road building authorities of the State for reports showing not only work done, but all the work contemplated. These reports will make it possible to eliminate some of the defects of our present system. A change under which the State Road Fund would be materially increased and be raised from some definite sources of revenue, set aside for that purpose, would go far toward removing the others.

The Legislature has in the past shown every disposition to deal liberally with the road question, but the department has of late never been able to meet the demand.

Neighboring states have adopted or are seriously considering an issue of a large sum in bonds for the purpose of improving their public roads. The State of Ohio, one of the most progressive of communities in this respect, last year rejected a proposition to bond the State for \$50,000,000.00 and instead thereof enacted a law imposing a State wide tax of a half a mill on total of ratables, to be used for road purposes without further appropriation by the Legislature. This plan has been found conducive to efficiency in the conduct of the affairs of the Ohio Road Department in that it is thus enabled to plan its work for some time ahead.

As to a bond issue, it can be shown that in the case of a \$10,000,000.00 issue, to be spent in ten years in the construction of roads, costing on the average of \$10,000.00 per mile for construction and \$500.00 a mile per year for maintenance, the total charges, including the sinking fund, interest and repairs, would be slightly over \$34,000,000.00, or at an average rate of \$850,000.00 per year. If this amount be set aside each and

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every year and applied, first to the maintenance of roads already built and then to new work, an equivalent mileage could be constructed in a little less than seventeen years and maintained for the whole period at a total cost of about \$25,000,000.00, a saving of \$9,000,000.00. If the same amount (\$850,000.00 a year) were to be spent for the forty-year period, the mileage could be increased fifty per cent. over that resulting from the bond issue.

Whether or not a bond issue be authorized, a yearly fund must be raised to meet the charges for administration, repair and either sinking fund and interest or cost of new construction.

For such a fund two sources of revenue are available in this State:

The general revenue of the State and the income derivable from the traffic using the roads. The numerous calls in other branches of State activities would make it seem improbable that any material increase in the road fund can be expected from the general revenue of the State.

The fund derived from motor vehicle fees is now devoted to repair of roads. The amounts charged for these licenses are hardly defensible as mere license fees. Considering these amounts and the use to which the fund is put, it is apparent that the former are justifiable as commutations of a toll charge. On such a theory all road traffic should be taxed.

The most reasonable basis is that of horse power, and this can be applied to horse drawn as well as motor driven vehicles.

Our present scale of fees is much below the average of neighboring states and should receive careful re-consideration. Our classification of motor vehicles is unfair and not based on any sound reasoning. Horse power seems to afford a fair basis for taxation. The main cost in operation of most cars is for tires. The life of these depends on road conditions. Their cost varies somewhat, as does the power of the car, and can be taken as about \$1.00 per horse power. If, therefore, the improvement of our roads saves each car one tire a year, a charge of \$1.00 per horse power would about offset this saving. That the saving is much greater is beyond question. If, however, such a scale of charges is to be adopted, it is suggested that the traffic subject thereto be exempted from local taxation.

I attach an estimate of the probable result of the suggested change in the motor vehicle license fees, based on the business of 1913, classifying vehicles in classes of ten horse power each, charging the class at the average horse power and allowing for an increase of ten per cent. in registration.

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ESTIMATED MOTOR VEHICLE LICENSE FEES ON BASIS OF AVERAGE CHARGE AND \$1.00 PER H. P.

[illegible]

R. A. Meeker's Report.

November 28th, 1913.

*Colonel E. A. Stevens, Commissioner of Public Roads, Trenton,
New Jersey:*

DEAR SIR—Since your advent into the office of commissioner there have been several marked changes in the administration of the office. Plans have been standardized, a uniform size of sheet adopted, also a standard scale of eighty feet to the inch for plans and profiles, with a vertical scale for profiles of four and eight feet to the inch, according to the character of the surface. Our cross sections are also plotted on the scale of four feet to the inch, thus enabling the department to check more rapidly and accurately the quantities submitted by the engineers. The further requirement is made that all cross roads and entrances to private property must be shown on plans and also in profile, in order that there may be no question whatever as to the quantities to be supplied or removed. The drawings have been further completed by requiring that all important trees shall be indicated and those to be removed so marked, the further requirement that the location of all buildings within fifty feet of the center line be shown, also details of retaining walls. The names of all property owners are also required and the ownership of whatever property was necessary to be taken for straightening the right of way has also been shown. At railroad grade crossings the elevation of the top of every rail crossed must be shown, as well as the detailed profile of the road at such points, on a scale of one foot to the inch vertical, and four feet to the inch horizontal.

Some of the items above enumerated have been shown by our engineers previously, but not by all. There has therefore been much dissatisfaction and dispute in counties where these things were not required. For the good of the service and the promotion of efficiency and harmony, it was deemed wise that all plans should be made as complete as possible.

Another duty imposed upon the department within the past three years is that of supervising all plans and specifications for bridges built on the line of improved roads. In this work there is imposed still further and more exacting duties upon the department.

The testing of materials has been carried still further, and a carefully compiled list of materials, which have been examined and approved for use, also a standard composition for bituminous materials and carefully compiled series of analytical and physical tests, have been published. To meet the demand for bituminous concrete pavements, the composition of the mixture, which will be acceptable to the department, is also prepared and published in our specifications.

In times past a great deal of trouble has arisen after the work was under way by reason of the failure of the local officials to acquire the necessary rights of way for the projected improvement. In order to overcome this difficulty, a certificate for the right of way is attached to and forms a part of the specifications and contract. This certificate declares that the local authorities have secured the necessary grants, conveyances, etc., for all the lands needed for said road and releases from damages by reason of the construction of said road, except as to land of persons specified and that as to these the governing body has ordered its solicitor to proceed at once, upon the approval of the contract by the commissioner, to condemn all such lands as are needed for said construction. The specifications also contain a certificate that all samples, proportions and grading of aggregates have been duly filed or adopted. A form of surety bond, prepared by the Attorney-General's department, has also been added to the personal bond form heretofore attached to our contract. The form of contract itself has been revised by the Attorney-General's department to conform to the revised statutory requirements, including the liability of employers. As many questions were raised in reference to the bonds furnished by contractors in former years, it was deemed wise to require the approval of the bond by the finance committee of the governing body, in order that the responsibility might be properly placed.

The increasing receipts from the motor vehicle department and the growing demands for money to maintain our improved roads in proper condition, have necessitated the systematizing of the methods by which the motor vehicle funds could be best distributed. In the early days of the motor vehicle fund the money was sent to the counties and they expended it as they saw fit, sometimes in a very satisfactory and economical manner and at other times in such a way as to raise a storm of protest. In order to insure the most efficient expenditure of this money it was necessary that rules and regulations for its expenditure should be established. On all of the larger repair work plans and specifications similar to those required for original im-

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provement work are required, and upon the approval of these plans and specifications allotments are made to the counties or municipalities. The allotments are made in duplicate, one copy being furnished to the officer in charge of the local improvement and the other being filed in the department. These allotment sheets also require that the officer in charge of the work shall certify that the said work has been completed in accordance with the plans and specifications and to his satisfaction. The work is further examined by a member of this department, and, after examination and approval by him, a certificate is issued to the governing body, by virtue of which the money is paid into their treasury.

The examination and preparation of these various papers imposes a great and constantly growing burden upon the department, but has promoted very much the efficiency of the local officials and increased the quantity and quality of the work done.

Upon your induction into the office, the force consisted of a supervisor, who acted as chief engineer; two supervisors, who acted as division engineers, a secretary and one clerk. This force has now been increased and at present consists of a State Highway Engineer, four Division Engineers, ten Inspectors, six Foremen, a Secretary, a Clerk and an Accountant. Three of the Foremen are in charge of the convict camps, established under a provision of the Legislature for the employment of State prisoners upon the public roads. These camps entail many and varied duties upon the department, for not only must the camps be built in such manner that the men will be comfortably housed and well guarded, but also that they may be supplied with proper food and the necessary tools to carry on the work in the most efficient manner. In order that the work may produce the best results possible, it is necessary that it should be carefully planned and properly executed. To this end it is necessary to supply the men with means of transportation from the camps to the scene of the work and also that the machinery is kept in proper condition for work at all times.

The other foremen will form the nucleus of the force necessary to handle the State highways as these are taken over. It would be a short-sighted policy to undertake this work without a trained force, for which these men will supply the start.

The incoming of the many and various accounts has necessitated the addition of an accountant to our office force, in order that the bills and contracts may be properly entered and an accurate statement of receipts and expenditures kept. The system of charging against the appropriation not only the contract price of a road but also a reserve based thereon to cover en-

gineering, supervision and contingencies, is undoubtedly correct in principle and a safeguard against exceeding appropriations. It also furnishes valuable information but entails an increase in labor.

In order to further promote the efficiency of the department, it was deemed wise to procure automobiles for the three division engineers having charge of the northern, central and southern divisions, into which the State is laid out. In the early days of the department nearly all of our improvement work could be reached by railroad, supplemented by a short trip either on a wheel or in a wagon, but as the improvement has been pushed further and further away from the railroads it was found almost impossible to keep in touch with the progress of the work throughout the State without a better means of transportation. The wisdom of procuring these machines is evinced by the fact that the division engineers in the discharge of their duties have covered over 25,000 miles since April last and have been able to keep in touch with the work at all times, thereby avoiding many misunderstandings and tedious delays. In fact it may be said that the machines have paid for themselves in the increased efficiency made possible by their use.

Very truly yours,

R. A. MEEKER,

State Highway Engineer.

Report on Road Work in Northern Road Division.

Mr. R. A. Meeker, State Highway Engineer:

DEAR SIR—It is becoming more and more difficult to separate the construction and maintenance on road work, as the counties are practically rebuilding many of their roads and improving line and grade under the head of "Maintenance". In the counties in which roads were built under the so-called "County Bonding Act," they are being resurfaced under the head of "Construction".

The most thickly populated districts of the State lie in North Jersey. Here the traffic on the principal roads requires the strongest possible pavements. In some cases the local authorities have joined with county and State in repaving the old roads with stone block on concrete foundation costing over \$3.00 per square yard. These pavements, when grouted with Portland cement, are smooth enough for pleasure vehicles during the first few months, and wear well under heavy traffic for years.

The Commissioner suggests that the various types of block and brick pavements be laid with the blocks running diagonally instead of straight across the streets as at present; this will probably prevent some of the longitudinal ruts and cause less jolting.

Asphalt concrete, both hot and cold mixed, has been laid in many sections where the cost of block or brick pavements would be prohibitive, and has usually given good satisfaction. Failures of this class of work, however, have sometimes occurred where the foundation was poor.

The best results in the penetration work have usually been obtained by building or repairing the roads, as old-fashioned water-bound macadam, flushing and rolling it until the voids were nearly filled, covering this with successive layers of heated tar or asphalt and fine stone or clean gravel. Patching of this class of road is easily accomplished by thoroughly cleaning the depression, painting with bitumen and filling it with stone. The deeper holes require additional layers of bitumen and stone. Great care must be taken to use enough bitumen to prevent ravelling. An excess of material, however, is just as bad, as it causes bleeding and eventually bumps in the road. When these bumps occur they are best reduced by the use of a grub-hoe

ground sharp like an adze, and are more easily chipped off in cold weather when the bitumen is brittle.

Outlying districts still find it possible to maintain some of their roads in good condition with water-bound macadam by frequently spreading a small quantity of new stone and shoveling the loose material back into the road.

The skilled labor proposition seems to give more trouble than the supply of material, as the majority of our bad roads are due more to the lack of skillful manipulation than to poor material furnished.

Gradual improvement is noted in the amount of underdrainage, shoulder and gutter work done and the trimming of trees and bushes. In some sections the trees are very carefully trimmed the same height from the ground. Other trees are only trimmed on the roadside; branches also are not sawed off close enough to the trunk. These leave a very crude appearance.

Many culverts and extensions of culverts, nearly all of which are concrete, are built under the appropriations for maintenance.

A few dangerous turns each year are straightened and the line of view lengthened by the widening and the removal of obstacles on the inside of curves. These danger eliminations are rapidly becoming more necessary owing to the frequency of accidents which result from vehicles meeting without warning, owing to bad turns or short, steep hills.

The county of Essex is the first in New Jersey to establish a comprehensive system of patrol for the repair of the county roads. This has been in successful operation for several months.

ROAD CAMP NO. I.

New Jersey's pioneer convict labor camp for road work has been established in North Jersey this summer, and is now in successful operation with thirty men and the equipment for ten more as soon as they can be furnished by the prison authorities. This is the first instance in this State where convicts have been kept out of the prison over night.

While the establishment of the camp, purchase of all the necessary furnishings and machinery and the laying and superintendence of the work has been taken care of by the Department of Public Roads, representatives from the prison see to the proper conduct of the men. Five guards are at present furnished for this purpose. These are too many if the honor system is to be adopted, and too few if they are to be held under actual guard.

Respectfully submitted,

E. M. VAIL,

Division Engineer.

Report on Road Work in Central Road Division.

Mr. R. A. Meeker, State Highway Engineer, Trenton, New Jersey:

DEAR SIR—State aid in construction has required uniformity in design and execution, but in the repair of roads no such uniformity exists. This is due to lack of knowledge, to insufficient funds in the various counties and also to the different methods followed by the various officials in charge of road repairs.

The system under which our roads are maintained is a very poor one, yet in spite of this many of the roads are in good condition. The members of the bodies in charge of these important matters are constantly changing, and by the time a man becomes familiar with road work another man is elected in his place and the process of education begins anew. If this system were followed in private business we all know that it would soon end in complete failure. When one has rendered efficient public service and has been in office some time he is usually rewarded by being ousted because he "has had it long enough."

Another practice that does not make for efficiency is that of dividing the county into districts, each freeholder having charge of the roads in his district. A county supervisor is elected, but, contrary to the provisions of the statute, a certain district is assigned to him. Under this practice his district might just as well be divided among the others and thus save the salary of this county officer, but the law provides that all bills for repairs shall be certified to be correct by the county supervisor of roads. Hence the intent of the law is to have the repair and maintenance of all of the improved roads under the supervision of the county supervisor.

The section of the road law of 1912 which provides for the appointment of ten permanent inspectors is a good one; the work done by these men has been of a high order. I would recommend that when they have been on inspection work for two years their salary be increased to \$1,200 per annum. The work done by these inspectors is certainly worth that and they can save the State in construction much more than that sum in one year.

The most important construction, from the viewpoint of the State, finished in the central division during the past year, was the completion of the road between Lakewood and New Egypt and the completion of the Lakehurst-Brown's Mills road as far as the Burlington-Ocean county line. When the section in Burlington county is finished from Brown's Mills easterly to the county line, this will give an improved road across the State from Philadelphia and Camden to Tom's River and the Ocean boulevard. The road from Tom's River to Lakehurst should be widened and re-surfaced. A bridge is now being constructed by private enterprise across Barnegat bay from Island Heights, just east of Tom's River, to a point north of Seaside Park, so that it will soon be possible to reach that beach direct from Tom's River without having to go to Mantoloking or Point Pleasant.

In Hunterdon county the new construction has consisted of ordinary water-bound macadam with a bituminous dressing. This has proven to be less expensive and more satisfactory than the penetration method. It was found much easier to obtain a more uniform distribution when half a gallon of bituminous binder per square yard was applied to the well bound macadam road, than when a gallon and a half of bituminous binder per square yard was incorporated with the one and one-half inch stone. This is a good form of construction, and I would recommend its more general use instead of the plain water-bound macadam road. Hunterdon county finished its first State aid construction in 1906, hence the problem of repair in this county is not the serious question that it is in the counties where roads were built fifteen, eighteen and twenty years ago. The repair work in this county has been done by force account, and has consisted of cleaning out the ditches and gutters, patching the macadam and applying screenings.

In Mercer county no new construction has been done during the past year. The county has wisely refrained from spending a great deal of money on new construction and consequently neglecting the roads already constructed. The most expensive repairs consisted of widening, reducing excessive crown, adding from two to three inches of one and one-half inch stone, rolling and finishing with screenings. Several days later, when the road had become thoroughly consolidated, any loose material was swept off of the surface and water gas tar was applied at the rate of one-half gallon per square yard, with very good results. Lignin binders (derived from the manufacture of wood-pulp) have also been tried on the macadam roads and have so far given good results. The repair work in Mercer county has been done

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by the county's own road force under the direction of the county supervisor.

In Middlesex county the new construction consists of plain macadam. The small repairs have been made by force account, and bids have been received and contracts awarded on the more extensive work, this latter comprising scarifying of the old surface, adding stone, widening, rolling and applying a light asphalt oil. A great improvement has been made at Morgan Station by the erection of a wide bascule bridge and the widening of the road.

In Monmouth county the new work has been of gravel. The repairs have consisted of gravel re-surfacing, and in some cases spreading three-quarter inch stone on the existing gravel road and then wetting and thoroughly rolling with a ten-ton steam roller. This method gives very good results. The northerly approach to the Oceanic bridge has been widened at the expense of the county with very little aid from the State. This will be re-surfaced with gravel in the spring and will complete this much needed improvement. The county has purchased a three-ton scarifier for use on its gravel roads, and it has already proven its efficiency. It was first used on a gravel road that was very wavy, with the result that the waviness was eliminated and much less gravel was required than if the road had not been broken up.

In Ocean county all of the new construction has been of gravel. The repair work was done by force account under the direction of the county supervisor, and consisted of cleaning out gutters, widening and re-surfacing with gravel.

One county in the central division still insists on repairing roads by spreading three-quarter inch stone for a width of four feet in the center and a depth of from one and one-half to two inches, and leaving it for the traffic to scatter and consolidate, with the result that much of it is wasted. This is an obsolete method, in vogue during the days of McAdam, but not suited to modern conditions.

Much more but not enough attention is yet given to keeping the shoulders, gutters and sides of the road in proper shape, and their proper care is something that the Department has asked for with constantly increasing success.

The writer realizes the difficulty incident to any changes in the method of treating the road question, but it is a matter that should be investigated. Mechanics, potters, plumbers and other trades require an apprenticeship of from three to five years, and yet in public life important positions are given to men who often-

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times have had very little experience, and sometimes none at all, in that particular line of work. The roads should be in charge of men who have made a study and a business of road work.

Respectfully submitted,

EDWARD E. REED,
Division Engineer.

Report on Road Work in Southern Road Division.

Mr. R. A. Meeker, State Highway Engineer, Trenton, New Jersey:

DEAR SIR—The mileage of improved roads in the Southern Division totals 1,498 miles, of which there are 634 miles improved with State aid, 25 miles of turnpikes, and 839 miles which the townships have put in fairly good condition.

We have been prevented from doing all the work that the condition of the roads called for owing to the limited amount of money available. The passage of the reciprocity law is in a large degree responsible for the condition of the roads and the lack of money, for by its passage the receipts from motor vehicles have not been increased in proportion to the increase in wear of the roads. Our roads are subjected to a very heavy motor vehicle traffic from other States, from which we receive no revenue. As this traffic is both heavy and fast, it has greatly increased the wear on the roads.

I estimate that during the summer season at least seventy-five per cent. of the traffic over the main highways leading to the seashore was from other States, and paid no fees to this State. While this percentage will not hold on all of the roads, it decreases as the importance of the road decreases, until on the least important roads I estimate that but three per cent. of the travel was foreign; on these latter roads the cost of maintenance was also small.

It must be borne in mind that when a road has once become rough, or as usually called "bumpy," the wear caused by the passage of any given vehicle is greatly increased; this can be realized when one stops to consider that the bumping action so noticeable and disagreeable to the passenger must be offset by an equal and opposite reaction on the road, in other words the vehicle bumps the road just as hard as the road bumps the vehicle. The road structure must absorb the energy of these blows; this it cannot do without wear and disintegration.

It has been our endeavor to put the main roads in repair, and where the money available would permit, we have done some work on other roads.

In Atlantic county, we have treated the White Horse pike, from Hammonton to Absecon, and the Chestnut Neck road, from Absecon to the Mullica river, with a lignin binder, which material has given so far very good results wherever it has been used.

In Burlington county the work on the roads was hampered owing to the legal status of the board of freeholders, but we have succeeded in getting some of the principal roads repaired.

In Camden county the most important macadam roads are being re-surfaced with stone and in some instances bituminous concrete is being used. The White Horse pike, which is the main road of this county, has been repaired along the shoulders where the traffic has worn them down. This county has spent quite a large amount of money this year for dust-laying oils, and, as is the case in most instances, the results are not satisfactory. The city of Camden does not seem to realize or appreciate what the county has done for it; the county has built good roads into Camden in all directions, but as soon as you pass the city line the streets are in very bad repair.

In Cape May county the Main Shore road from Cape May to Cape May Court House has been repaired and scraped and new gravel applied in places where it was needed. From Cape May Court House to Seaville the road has been treated with a lignin binder.

In Cumberland county, while the people are alive to the need of good roads, the board of freeholders is very slow in having their roads improved, and they have not appointed any county road supervisor to look after the repairs as provided by law.

In Gloucester county they have been very active in the repair of their roads and have re-surfaced them in several instances. From Franklinville to the Cumberland county line the road was re-surfaced with gravel and treated with a lignin binder. The gravel roads, where they run through towns, have also been treated with lignin binder. The macadam roads in towns have been treated with a bituminous surface treatment. This county is to be commended in that they have abandoned the use of light oils for dust laying; as usually applied these oils are of very doubtful value, and in some cases actually detrimental.

In Salem county the road repairs are being carried on quite extensively, the public here realizing that good roads mean better facilities for getting their produce to the market in first class condition.

The Legislature last year made an appropriation for the purchase of automobiles. These machines were delivered in April, and since that time have been in constant use, fully demonstrating

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their usefulness in the work. Before these machines were purchased it was necessary to use the trains in order to inspect the roads. This method was very unsatisfactory. It is very seldom that the road is convenient to a railroad, and it was necessary to hire conveyances to get to the job after leaving the train. The train service was usually such that it was impossible to make connections in order to visit more than one job in a day, while with an auto it is not only possible to visit several jobs, but in doing so an opportunity is afforded to note the conditions of all the roads passed over and thus keep constantly informed as to their condition. I have covered twelve thousand miles with the machine which I use.

Respectfully submitted,

M. HARRY WEEKS,
Division Engineer.

Report on State Aid Bridges.

During the past year the State Road Department has, for the first time, had a voice in the design and construction of highway bridges. It would be hard to imagine a greater variety of conditions than those encountered in this State in bridge construction. No standard type of bridge can be adopted for a given span that will meet these various conditions in all the counties. The character of the foundation varies from a caisson or pile and platform type of the southern part of the State to the firm rock of the northern counties, and the numerous waterways of navigable character crossed by the highways make swing or lift bridges an absolute necessity.

The problem of maintenance has been given equal weight with the first cost in the design of all State aid bridges. As the bridge floor is usually the largest item in the repair bill, an effort is made to adopt designs allowing the full pavement of the road to be carried over the bridge, thus preserving the continuity of the highway. A minimum clear width of 30 feet is recommended for all types, and no bridge of less width is approved unless local conditions render such construction practically impossible. Where a highway parallels a stream, the old method of building the bridge at right angles to the water-way, thus making on the approaches abrupt grades and sharp curves with the true alignment of the road, is being discouraged in favor of the compromising skew-bridge with approaches of five per cent. maximum grade and no curve of less than six degrees.

Although the economic conditions have mainly governed the design, some attention has been given the æsthetic qualities, and in most cases the concrete structures have proved their superiority to the steel bridges in appearance. By incasing some of the steel beam and girder bridges with concrete, a better general appearance has resulted as well as a lessening of the cost of maintenance due to painting.

The increasing weight and volume of traffic demands stronger structures, and as under the new law the maximum load drawn over State highways is limited to 30,000 pounds, all the bridges should be capable of carrying at least this amount with a large factor of safety.

L. McENTIRE,

Division Engineer in Charge of Bridges.

STATE AID BRIDGES.

COUNTY	No. of Bridges of Different Types.				Pro- posed Bridges	Total
	Steel		Reinforced Concrete			
	Plate Girder	Draw Bridge	Arch	Slab		
Bergen,		1				1
Burlington,				1	3	4
Camden,			2	2		4
Cape May,		1				1
Cumberland,			1	1		2
Hunterdon,			2	6		8
Mercer,					9	9
Middlesex,				3		3
Monmouth,	1					1
Ocean,				1		1
Union,				3		3
Warren,			1			1
Total,	1	2	6	17	12	38

BRIDGES UNDER CONSTRUCTION.

County.	Number of Bridges.
Camden,	4
Cape May,	1
Hunterdon,	8
Middlesex,	2
Ocean,	1
Warren,	1
Total,	17

Perth Amboy-South Amboy Draw Bridge.

State pays one-third of repairs and maintenance from motor vehicle fund.
(Chap. 413—Laws of 1912.)

Total cost of repairs and maintenance, May 1, 1912 to Oct. 1, 1913,	\$22,366 79
State's share,	\$7,455 59

COMPLETED BRIDGES—STATE'S PAYMENT MADE.

<i>County.</i>	<i>Road.</i>	<i>Bridge.</i>	<i>Type.</i>	<i>Total Cost.</i>	<i>State's Share.</i>
Burlington,	Cookstown-New Egypt,	Cookstown,	Concrete Slab,	\$4,000 00	\$800 00
Cumberland,	Malaga, 2d Sec.,	Parvins,	Concrete Arch,	\$1,278 37	\$255 67
Cumberland,	Malaga, 2d Sec.,	Tarkiln,	Concrete Slab,		
Cumberland,	Malaga, 2d Sec.,	Sta. 82 + 09,	Pipe Culvert,		
Cumberland,	Malaga, 2d Sec.,	Sta. 93 + 37,	Pipe Culvert,		
Middlesex,	Perth Amboy and Keasbey,	Keasbey Creek,	Concrete Slab,	\$5,600 00	\$1,120 00
Monmouth,	Red Bank and Holmdel, 3d Sec.,...	Holmdel,	Plate Girder,	\$3,660 40	\$732 08
Union,	South Ave.,	Sta. 91 + 75,	Concrete Slab,	\$416 00	\$83 20
Union,	Westfield Ave. Extension,	Bridge #1,	Concrete Slab,	\$4,600 00	\$1,460 00
Union,	Westfield Ave. Extension,	Bridge #2,	Concrete Slab,	\$2,700 00	

Laboratory and Experimental Work.

LABORATORY WORK.

As in previous years, all work in connection with testing road materials has been done in co-operation with the State Geological Survey in the laboratory maintained by that department, and has been under my immediate direction.

We have endeavored to test all the bitumens and most of the road metals that are used in constructing bituminous pavements. In addition to these, most of the concrete, sands, Portland cements, gravels and other road binders used have been tested, in order to see if they comply with our required standard of quality.

The general method of procedure followed in testing a bituminous pavement during construction is to see first that all materials shipped are of the proper grade and quality. Second, that the equipment is of the standard type. Third, that the materials are properly combined at the initial stage of construction. Fourth, that only materials of the proper grade and quality are used during construction and the same blended in the manner previously determined.

To effectively carry out the inspection of a pavement in the manner above indicated requires very careful and prompt attention to details. The contractors are seldom asleep on a job, and promptness is necessary to prevent wholesale condemnation. It is not easy to correct slight errors in construction, especially if doing so would increase the cost of construction. A sample is taken daily during construction and tested. When several pavements are under construction at one time the volume of work is great. However, our experience has proven quite conclusively that a constant check must be kept on the work if a satisfactory product is to be secured and maintained. The mere fact that materials are of a standard degree of quality, and maintained thereat, is not sufficient to guarantee a good pavement. The results secured in the laboratory must be interpreted and applied at the roadside. To do this often requires a personal inspection of the work and the equipment.

A pavement may be of the correct composition, yet prove a failure by being improperly laid. Our inspectors seldom have had much experience in the work they are supervising. They have to be constantly instructed and even then can very seldom

be considered efficient. In carrying out the work along these lines, considerable time must be spent outside of the laboratory. Personally, I feel as if too much of my time is spent in the laboratory, for seldom has a visit been made that has proven to be fruitless. On the other hand, serious errors in construction have been corrected that would have proven costly had they not been remedied.

EXPERIMENTAL WORK.

No experimental roads have been constructed during the past year. Some old macadam roads have been repaired and treated with different compounds to determine the value of the same. These experimental trials have most generally been limited and cost but very little, yet very valuable data is often secured in this way.

The various sections of experiments made on the Whitehorse-Mapleshade road during 1911-12 are yet in quite good condition. It was not expected at the time this work was done that some of these experiments would last many years. They were constructed chiefly to determine the resisting power of certain asphalts when subjected to adverse conditions. The sections of bituminous sand mortars constructed with California asphalt show quite plainly the ability of this grade of binder to resist decomposition, for some of these mortars have no foundation under them except the sub-base of sand.

The section constructed with Westrumite is in good condition with the exception of a few points where failures have developed. These failures may be and no doubt are caused by faulty construction either in the application of the surface or lack of stability in the base. It is, however, quite evident that this pavement must be waterproof, for at points where the pavement becomes porous or ravel, so that water can enter, the disintegration spreads rapidly.

The section constructed with a sand-concrete base and a mortar top shows quite plainly the advantage of this type of base. The mortar applied upon this type of base at Moorestown is yet in a very good condition, and it would appear that this is the proper method of repairing the old cobble-stone pavement on the Moorestown-Camden road.

The tar pavement near Hartford Station, N. J., constructed in 1911, softened more or less during the hotter part of the summer. It was found necessary to apply a slight layer of sand to the surface in order to absorb the excess of tar. This piece

of road is subjected to exceedingly rough travel, principally truck-wagons that travel practically in one rut. The gravel base has not given away even under these conditions, and with slight repairs this road can easily be kept in fair condition for several years. The bituminous top appears to have water-proofed the base so that it does not soften to any great extent during the winter and early spring.

The experiments made with Glutrin during 1911-12 proved sufficiently promising to warrant the application of this material to gravel roads on quite an extensive scale. The results secured this summer have demonstrated that our conclusions based on these experiments were not hasty or incorrectly drawn. There appears to be little doubt but that this material will maintain a gravel road in good condition during the time these roads are subjected to the heavy auto travel. One application per year, however, may not be sufficient to keep these roads hard and dense during the wet seasons. This material is soluble in water, and some of it will naturally leach from a road during the wet seasons and should be replaced in the spring.

In the application of this material it is very essential that it be applied in several applications in a dilute form. The applications should follow each other as soon as the previous one has penetrated the road until the desired quantity has been applied. It is a mistaken idea to assume that each rain will wash this material farther down into the road. On the contrary, as the road dries the ingredients in the road which have been dissolved by the water are brought to the surface and deposited there when the water evaporates.

The quantity to be spread per yard depends naturally upon the type of road and the condition of the same. For an ordinary gravel road from $\frac{3}{8}$ to $\frac{5}{8}$ of a gallon has been found sufficient.

As yet, the results secured on a macadam road with this material have not been very promising. It has, however, not been applied under conditions which were very favorable to its success. During this season we have applied it to some macadam roads under more favorable conditions than when previously applied. So far it has kept the surfaces of these roads in good condition. Since they have not passed through a winter it is too soon yet to prophesy how long this application will be able to keep these roads in their present condition.

During the fall of 1912, three samples of concrete roads were constructed to determine the wearing quality of concrete when used as a road surface. One of these is situated about three miles northeast of Phillipsburg, N. J., near New Village, and the other

a short distance outside of Camden, N. J., on the White Horse pike.

The former road was built of various thicknesses with expansion joints at different intervals. This road has cracked in several places. The cracks most generally run parallel to the axis of the road. The expansion joints apparently have not prevented the concrete from cracking, while, on the other hand, the concrete has started to ravel and form a slight depression on the corners of the expansion joints. This would appear to be quite a serious defect, for once a slight depression has formed across the road in this manner, it will soon become sufficiently deep to be quite objectionable.

A few places in the concrete road on the White Horse pike have started to disintegrate and ravel. The appearance of these failures indicate that in this case the concrete had not been laid of a uniform composition. This is to be expected for very seldom is concrete laid that does not contain some lean spots. It also appears that the concrete itself does not have sufficient resisting power to withstand the abrasion on a heavily traveled road. It should be protected by some kind of a surface pavement. One-half of the concrete surface on the Phillipsburg road was given a paint-coat of tar, using about $\frac{3}{8}$ to $\frac{1}{2}$ of a gallon per yard and covered with stone chips. This surface is still intact and has not loosened or peeled off from the concrete in the manner that such applications often do.

The cost of the various experiments made during the last three years has been quite limited. The data secured is often worth many times the cost of the experiment, even when the experiment is a total failure. A negative result is often just as valuable as a positive one. New methods of construction, road binders and compounds are constantly being devised and prepared. Some possess merits while others are worthless. It is much cheaper to determine the value of these by a cheap experiment than to allow some county to construct several miles of a pavement, the merits of which are unknown, but later prove to be worthless. Most of these new panaceas have very influential advocates, and no time should be lost in determining their values if the use of the worthless are to be prohibited before much money has been wasted in this manner.

SUMMARY.

From the experiments which we have made during the last three years, and the results which can be interpreted from our regular methods of construction, the following conclusions can be drawn:

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First. Our gravel roads can be maintained in fairly good condition during the greater part of the year, if not during the whole year, at a fairly low cost per mile by the application of a lignin binder and a systematic method of maintenance.

Second. The construction of expensive bituminous pavements should be confined to main roads and localities where this type of construction is the only one that can be economically maintained. If the difference between the price of a thin top, which could be easily and cheaply replaced, and an expensive pavement is put into a proper base and drainage system, a permanent improvement is thus secured. Then, if the condition of travel changes upon such a road and the present pavement is no longer capable of being economically maintained under the changed conditions, a new pavement can be constructed that will meet the requirements of the changed conditions for a proper foundation for such a pavement already exists upon the road.

Third. It is not advisable to apply expensive bituminous surfaces to old macadam bases, and risky to lay them on new macadam bases. The base of an old macadam road is a very uncertain quantity and practically never properly drained. When a bituminous pavement is applied to a new or repaired macadam base, it should never be a dense, brittle pavement, but one which is semi-elastic, even in cold weather, and should be porous beneath to prevent the ingress of water from the base through capillary attraction.

Fourth. Hard and dense bituminous concrete pavements of a uniform composition should be laid on properly drained concrete bases which are not subject to movement or displacement. The costs of these pavements are such that it is poor economy to subject them to the adverse conditions which usually exist upon macadam bases.

Fifth. Bituminous roads constructed by the penetration method have most generally proven to be a failure. They cost from fifty per cent. to seventy-five per cent. of the price of a good bituminous concrete pavement and seldom give fifty per cent. of the service of such a pavement. They often need repairing at the end of the first year and sometimes are total wrecks in three years' time.

ROBERT B. GAGE,
Chemist to Geological Survey.

The State Highway System.

ROY MULLINS, RIGHT-OF-WAY ENGINEER.

Following the preparation of small scale maps of the proposed State highway system, so many uncertainties developed in the matter of exact location of right-of-way that it was deemed advisable to make systematic surveys and large scale plans of the various routes, showing the present location of the roads and all existing features that might have any bearing on the proper location. So many changes from the original recorded layouts were found, that it was necessary to make searches of records throughout the State to determine the authority for the present locations and apparent encroachments.

The engineering staff for the survey has been partly organized by appointing the county engineers as resident engineers in the several counties as provided by law. Owing to inadequate legislation, difficulty has been encountered in meeting the cost of this work and consequently progress has been much impeded.

With respect to the searches, the roads have come into existence through acts of various State and municipal authorities, some of them dating back to provincial days, and it seemed best to entrust this branch of the work to a central organization rather than to divide it among the counties. Permission was therefore obtained to proceed in this way and searches for the main thoroughfares of the State have been nearly completed. The right-of-way engineer has had charge of receiving, filing, indexing and plotting the results of these searches.

It is the desire of the department that roads be put in first class condition before being taken over by the State as part of the highway system. To this end improvement and repair work is now under way in Mercer and Sussex counties by convict labor.

On the whole, the development of the State highway system is in shape to progress rapidly as soon as funds are available for the necessary surveys and for placing the roads in such condition that they can be economically maintained.

APPENDICES.

APPENDIX A.

CONTRACT FOR STATE AID

for the Bridge over the

.....
IN THE.....ROAD

Between the

STATE COMMISSIONER OF PUBLIC ROADS

and the

BOARD OF CHOSEN FREEHOLDERS,
COUNTY OF

.....
WHEREAS, The State Commissioner of Public Roads, under authority conferred on him by section 4, chapter 395, laws of 1912, deems the following bridge in the.....
a road to be improved, namely,
to be.....

and the cost of the structure yet unbuilt to replace the said bridge as too great for the public body charged with its construction;

AND WHEREAS, The Board of Chosen Freeholders, the body so charged, desires to replace the said structure with.....

.....
Now, THEREFORE, It is agreed between the said parties, the Board of Chosen Freeholders of.....County and the State Commissioner of Public Roads, that the said Board will erect, or cause to be erected, the structure above described at a location to be approved by said State Commissioner of Public Roads and in strict compliance with plans and specifications likewise to be approved by the said Commissioner.

The said Board further agrees that the contract for the erection of said structure shall specify that payments on account shall be not more than 80 per cent. of the cost of the work, at the prices named in the contract, and that the final payment shall not be made until the structure has been accepted by the Commissioner of Public Roads as complying in all respects with the plans and specifications therefor.

The said Board further agrees to advertise for and receive bids as required in section 3, chapter 395, laws of 1912, in the case of roads, excepting that the certified check to accompany each bid need not exceed 10 per cent. of the price bid.

The said Board further agrees that all of the provisions as to the contract and bond and its approval and as to the approval of the plans and specifications, as provided in section 2 of said act, shall be enforced as to the planning and letting of the contract for the structure aforesaid.

In consideration of the construction by the said Board of the structure under the conditions above set forth, the said State Commissioner of Public Roads agrees, on behalf of the State, to pay to said Board, on completion of the work and its acceptance by said Commissioner, a sum equal to..... per cent. of the contract price therefor.

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IN WITNESS WHEREOF, The said Commissioner has signed and sealed these presents, and the said Board has caused the same to be signed by their Director and their corporate seal to be attached thereto and attested by their Clerk this.....day of....., 191....

.....
State Commissioner of Public Roads.

.....
*Director Board of Chosen Freeholders,
County of.....*

Attest:

.....
Clerk.

[SEAL.]

APPENDIX B.

PUBLIC ROAD LAWS.

CHAPTER 395.

AN ACT to provide for the permanent improvement and maintenance of public roads in this State (Revision of 1912, as amended by acts of 1913).

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The board of chosen freeholders of any county in this State may, at any time, by resolution, direct that any public road or section of road except a city street located within said county, being at least thirty-three feet in width, and at least one mile in length, or, being less than one mile in length, is an extension of or connection with some permanently improved or paved road or street, be improved by the construction of a macadamized road, or a telford or other stone road, or a road constructed of gravel, oyster shells or other similar materials, with or without plastic binder, in such manner that the same, of whatever materials constructed, shall, with reasonable repairs thereto, at all seasons of the year, be firm, smooth and convenient for travel. When more roads are applied for than can be constructed in any one year, the board of chosen freeholders and State Commissioner of Public Roads shall have power and authority to select from the roads petitioned for the ones first to be constructed, having first regard to the most important roads and the distribution of the benefits of this act to all parts of the county. The board of chosen freeholders may, before approval of any road, require as a condition of said approval that the township or townships or other municipalities through which said road runs shall pay ten per centum of the cost of said improvement, said payment to be applied to the county's share of the cost of the improvement of said roads constructed under this act.

Improvement of roads.

Materials used.

Roads designated.

Part payment by townships.
2. The said board, after passage of the resolution, shall cause a survey of said road so to be improved to be made, and plans, cross-sections and specifications of the work to be done on the same to be prepared. The survey shall indicate the width and length of said road, and shall also show how much of said road may be improved by deviation from the then existing lines, but no survey shall be commenced until the written consent of the State Commissioner of Public Roads shall have been first obtained. When the said plans, cross-sections and specifications shall have been prepared, they shall be submitted to the board of chosen freeholders for its approval or rejection. If such board shall approve the same, they shall then be submitted to the State Commissioner of Public Roads for his approval or rejection, whose duty it shall be, before approving of said plans, cross-sections and specifications, to ascertain, by personal inspection or otherwise, the natural character of the soil upon which such road is proposed to be constructed, and any and all other facts that he may deem important. If, after examination of the plans, cross-sections and specifications he approves their scope and detail, and by an inspection of the road, as aforesaid, he shall be satisfied as to the advisability of the improvement of the road as contemplated, and that the State's share of the cost of the construction of said road, together with its share of the cost of

Surveys and plans.

Approval by freeholders.

Examination and approval by commissioner of roads.

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Maximum expenditure yearly.

Bids invited.

Guarantee of bidder.

Contract.

Approval of contract and bond.

Proviso.

Five per cent. withheld for a year.

What included in road improvement.

As to bridge and culvert.

the construction of all other roads or sections of roads in this State, under plans and specifications previously approved by him, will not in any one year exceed the sum of five hundred thousand dollars, or such sum as shall in each year be appropriated for that purpose, then he shall approve in writing thereon said plans, cross-sections and specifications, otherwise he shall reject the same.

3. Within thirty days after approval of the plans, cross-sections and specifications by the State Commissioner of Public Roads, it shall be the duty of the board of chosen freeholders to advertise for bids for said work in two of the public papers printed in said county, and they may also advertise in one engineering journal published in the city of New York, for three weeks successively, at least once in each week. The first publication of which advertisement shall be at least seventeen days before the date fixed therein for the receipt of bids. This advertisement shall state the place where bidders may examine said plans, cross-sections and specifications, and the time and place where bids for said work will be received by the board of chosen freeholders or a committee of said board. Each bidder must accompany his bid with a certified check, payable to the county collector, for one thousand dollars, as a guarantee that if said work be awarded to him he will enter into a contract with said board for the same. This contract must be executed, together with a bond of the successful bidder, in the penal sum of at least the estimated cost of said work, with two or more sureties, freeholders of the county, or a surety or trust company created by this State, or a surety or trust company of another State, authorized to transact business within this State, to be approved by the director of the board of chosen freeholders and the finance committee thereof, conditioned for the faithful performance of said work in strict conformity with the plans, cross-sections and specifications for the same, within thirty days from the awarding of the contract. The contract and bond, before any work is done thereunder, must be exhibited to the State Commissioner of Public Roads for his approval, in writing, thereon, and said commissioner is hereby authorized, whenever, in his judgment, the best interests of the county require him so to do, to reject the same, in which case he shall write upon said contract the word "rejected," and append thereto his signature and official title of office, and said contract and the bond required to accompany the same shall, from the time of such rejection, be absolutely null and void, but such rejection shall in nowise operate to prevent said board from re-advertising for bids and proceeding thenceforth under the provisions of this act; *provided*, such action is taken within four months after such rejection, otherwise said approval shall be null and void. The time and manner of payment for work done under any contract awarded under this act shall be set forth in said contract, but at least five per centum of the contract price shall not be paid to the contractor until after the expiration of one year from the completion of the work and acceptance thereof in writing by the Commissioner of Public Roads.

4. The road improvement contemplated under this act shall include the construction of the road and its intersections with other public roads, the restoration or construction, as herein provided of proper and adequate entrances to properties, the building of any essential walls in cuts or for slopes, and of all necessary facilities for drainage in improvement aforesaid, also the planting of shade trees, such works as may be necessary to preserve existing shade trees.

When the State Commissioner of Public Roads shall deem an existing bridge or culvert in a road to be improved as unsafe, unsuited or inadequate to the need of the road or traffic which it serves, or of such design or character as requires too frequent repairs, or the cost of a structure yet unbuilt as too great for the public body charged with such construction, he may make written agreement therewith to bear a part of the cost of such new structure under conditions and for a design approved by him, but in

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no case in excess of twenty per centum of such cost. Such bridge and culvert building may be included in the road contract, or separately contracted for and advertised in the engineering journal as hereinbefore specified. Every such separate contract must be approved by the commissioner. All advertisements shall be made as required by this act, and bids received shall give separately the price of each bridge or culvert when the same are included in the road contract.

For the purpose of estimating the State's share of the cost of the work under this act, said cost shall include that of supervision and engineering.

Costs included in State's share.

The board of chosen freeholders may, after the execution and approval by the State Commissioner of Public Roads of a contract or contracts for improvement under this act, make, without public advertisement, supplemental contracts for additional work found to be necessary as a part of such improvement; *provided*, such contract shall not cover any additional mileage or length of road, nor alter the general character of the improvement; and *provided further*, that before any such contracts shall become binding, and before any work shall be done thereunder, they shall be submitted to and approved by the State Commissioner of Public Roads in the same manner as hereinbefore provided in the case of contracts let after public advertisement.

Supplemental contracts incident to work.

Proviso.

Proviso.

The State's share of or contribution to the cost of any improvement under this act shall be forty per centum of the total estimated cost thereof, except when otherwise provided in this act or when the same is left to the discretion of the State Commissioner of Public Roads.

State's share of cost.

5. A true copy of the specifications, bid, contract, bond, justification of surety and summary of all bids received (including any rejected and the cause therefor), certified to be such by the director of the board of chosen freeholders, shall, immediately after the awarding of any contract, be furnished by the board of chosen freeholders to the State Commissioners of Public Roads, to be filed and remain of record in the office of such commissioner.

Copy of all papers filed with road commissioner.

6. The State Commissioner of Public Roads is empowered to employ, as need arises, a staff of qualified road inspectors, certified as such by the Civil Service Commission at salaries not exceeding nine hundred dollars per year, and such proper itemized and reported expenses (not in excess of) two hundred and fifty dollars per year as the said commissioner may allow. Such staff shall not exceed ten in number, and may be removed for cause, or assigned to any work appertaining to roads which the commissioner may elect.

Road inspectors.

Salaries.

Number of inspectors.

If, in the judgment of the Commissioner of Public Roads, temporary inspectors are required, they may be appointed by the said commissioner, and shall be paid the sum of three dollars per day for each day of actual service. All inspectors shall be paid from the State's appropriated share of the cost of the road, and credit for these payments shall be allowed the State in fixing its share of such cost.

Temporary inspectors.

7. Where any contract provides for partial payments based upon the amount of work done, it shall be the duty of the inspector, in conjunction with the engineer, as each payment becomes due, to present to the board of chosen freeholders a certificate, signed by such inspector and engineer, in which certificate shall be stated, as near as can be, the amount of work done for which payment is to be made, and that the same has been done, in all respects, in strict conformity with the contracts, plans and specifications. When the work done under any contract shall have been fully completed, the inspector and engineer shall prepare a detailed and itemized statement, in quadruplicate, of the cost of the improvement, one copy whereof shall be filed with the board of chosen freeholders, one with the clerk of the county and two with the State Commissioner of Public Roads.

Partial payments on contract.

Final report.

8. The State's share of the cost of all roads constructed under this act shall be paid out of the State treasury, out of any moneys not otherwise

Payments by State.

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Amounts to be paid certified.

appropriated, if the same be first appropriated in the annual or supplemental appropriation acts. The Governor and State Commissioner of Public Roads shall certify, from time to time, to the State Comptroller the amounts to be paid to any county, township, town, borough, village or other municipality for such year, and the State Comptroller shall draw his warrant on the State Treasurer in favor of the county collector or collector of the township, town, borough, village or municipality, as the case may be, for the amount so certified, and the State Treasurer shall thereupon pay the same.

Partial payments to municipalities.

When any contract provides for partial payments based upon the amount of work done, the intent of this act is that partial payments to any county, township or municipality shall be certified as aforesaid, provided the amount so certified is not in excess of the State's proportional share of that paid on account of the contract or contracts for work done by said county, township or municipality as provided in section seven of this act.

County's share appropriated annually.

9. On or before the time fixed by law for the closing and final adoption of the annual tax budget of the county, the board of chosen freeholders of such county shall appropriate either in the annual tax budget or separately the county's share or portion of the estimated cost and expense of all work contracted for under the provisions of this act since the day fixed by law for the closing and final adoption of the annual tax budget of the county in the year next preceding which shall be the total cost of such work less the amount certified to be paid by the State.

Amount-certified to county tax board.

The sum or sums so fixed and appropriated shall be certified to the county board of taxation and shall be included in the assessment of county taxes and shall be assessed, collected and paid over to the county in the same manner and at the same time that other county taxes are assessed, collected and paid over; if a deficiency shall exist in consequence of the cost and expense exceeding the estimate, or in consequence of the receipt of a lesser sum from the State as its share of said total cost and expense than shall have been estimated or fixed, the board of chosen freeholders shall have authority to borrow, on temporary loans, such deficiency, and shall include the amount of the same with accrued interest in its next annual budget and the same shall be assessed, collected and paid over as other taxes are assessed, collected and paid over, or the same may be raised by an issue of bonds either separately or in conjunction with an issue to meet and pay the cost and expense of improving any other road under this act, and in the same manner as herein provided for issuing bonds of the county.

In case of deficiency.

If surplus

If, for any reason, there be a surplus, the same shall be retained and used in the improvement of other roads under this act or in repairs to roads improved under this act.

Bonds may be issued instead.

10. The board of chosen freeholders may, instead of certifying to the county board of taxation the county's share of the cost of any work done under this act, as required by the ninth section of this act, by resolution, adopted by a vote of at least two-thirds of all its members, issue bonds of the county for its proper share of the cost of said work which shall be an amount not exceeding the total cost of such work, less the amount certified to be paid by the State.

Roads chargeable to counties.

11. From and after the date of the approval by the State Commissioner of Public Roads of any contract under this act for the improvement of any road, such roads shall forever thereafter be a county road. Any road improved under the provisions of any previous act entitled "An act to provide for the permanent improvement of public roads in this State," any road accepted by any board of chosen freeholders under chapter one hundred and fourteen of the laws of one thousand nine hundred and four, and any road acquired under chapter one hundred and twenty-one, laws of one thousand nine hundred and ten, shall forever thereafter be a county road, and the duty of keeping the same in repair shall devolve exclusively upon the board of chosen freeholders and the county supervisor, as hereinafter mentioned, and all other powers and duties respecting such roads shall be

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imposed upon and vested in the said board of chosen freeholders, to the exclusion of all township, town, borough, village or other municipal officers. No power conferred on any of said governing bodies shall in any way divest the board of chosen freeholders of their right to construct across or under the sidewalks the necessary culverts or other provisions for the maintenance of such county roads. If any such road shall become out of repair, and shall not be repaired within sixty days after notice in writing so to do, given by the State Commissioner of Public Roads to the board of chosen freeholders, or to its director, the said Commissioner of Public Roads shall certify to such neglect or refusal to the State Comptroller, who shall withhold payment to such county of any moneys already apportioned, or that may thereafter be apportioned, to such county by the State, and no payment shall be made to said county until the State Commissioner of Public Roads shall certify to the State Comptroller that said road has been placed in a good state of repair.

Sidewalks and drains.

Proper maintenance.

12. After the first county road shall have been constructed under this act in any county, it shall be the duty of the board of chosen freeholders to appoint some suitable person as county supervisor of roads, and a qualified civil engineer as county engineer, each of whom, before assuming the duties of his office, shall make and subscribe an oath or affirmation that he will faithfully perform all the duties of his office to the best of his ability and understanding. Such supervisor and engineer shall hold office for five years and until his successor is appointed and qualified. Each shall give bond to the board of chosen freeholders in the penal sum of one thousand dollars, conditional for the faithful performance of the duties of his office, with such surety or sureties as the board shall approve. The said engineer shall receive such compensation for his services as the said board shall determine, and said supervisor shall receive a salary and allowance for expenses, both fixed by said board, but said compensation or salary is not to be reduced during the said engineer's or supervisor's term of office.

County supervisor and engineer.

Oath.

Term.

Bond.

Compensation.

The said engineer or supervisor may be dismissed at any time by the governing body after a proper hearing upon proof sustaining to the satisfaction of said body charges preferred by the said body or the State Commissioner of Public Roads for incompetency, neglect, disability or other cause. In the event of such dismissal the said board shall immediately appoint a new engineer or supervisor to hold for the full term of five years from date of appointment. The said board of chosen freeholders shall appropriate all moneys necessary to keep any and all roads constructed under this act in good repair and free from obstructions, and if the board shall have no money which may be lawfully used for such purposes, it shall have the power to borrow the same on the credit of the county, until the next annual taxes shall have been levied and collected. The cost of all repairs and removal of obstructions shall be paid by the county collector upon the order of the board of chosen freeholders, and all bills for repairs and removal of obstructions shall be verified by affidavit, and shall be certified to be correct by the county supervisor of roads.

Subject to dismissal.

New engineer or supervisor.

Money for road maintenance.

Cost of repairs, etc.

13. Whenever it is deemed necessary and advisable by the board of chosen freeholders of any county to acquire lands for the purpose of laying out, widening, changing the location of or straightening any road improved or to be improved under this act all cost and expense of obtaining and acquiring such land by whatsoever method the same may be acquired may be paid out of any moneys applicable for road improvement purposes, or, if there be no money on hand for such purpose, said board may borrow the necessary sum or sums on temporary loans, upon the credit of the county, until the next annual taxes shall be levied and collected or such sum as may be necessary may be raised by an issue of bonds, either separately or in connection with and as part of any other bond issue under the provisions of this act. The said board of chosen freeholders is hereby authorized to agree with the owner or owners of any lands required for the foregoing purposes, as to the compensation to be paid by said board for a conveyance of said

Payment for land acquired for roads.

If necessary may borrow.

Land acquired by consent or condemnation.

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Highway may be vacated.	land or lands, and in case said board cannot agree with the owner or owners of any land for the acquisition of the same for the foregoing purposes said board shall have the power to acquire said lands by condemnation, in the manner prescribed by law, and the said board is also authorized to vacate any part of any public highway that may be rendered unnecessary for public travel by the widening, straightening, altering or changing of location thereof.
Improvement by individual property holder.	14. If all the owners of property abutting on any road or highway, in any county, which has not been improved, or is not undergoing improvement, desire said road, or any section thereof, to be improved, and shall certify, in writing, to the board of chosen freeholders, that they are willing to bear the entire expense of such improvement, the county engineer, or other competent engineer, shall prepare plans, cross-sections and specifications for the work to be done on such road, or any section thereof, so to be improved, and shall submit the same to the owners, and if satisfactory to such owners, they are hereby authorized to enter into contract for such work, said contract to be first submitted to the board of chosen freeholders for its approval. Upon the completion of the work to the satisfaction of the county supervisor and the board of freeholders, and upon the submission to said board of proper receipts showing full payment for all work done, the said board of chosen freeholders may, by resolution, declare that said road, or any portion thereof, be thereafter a county road. The location of any portion of said road may be changed, if deemed desirable, upon acquiring the consent, in writing, of the owner or owners of land abutting on such portion of road so to be changed, and upon acquiring, without expense to the county, the land necessary for such change. The county supervisor shall be paid the sum of twenty-five dollars for supervising said work, to be paid by said owners.
Such road, if accepted, deemed county road.	
Change of location.	
Supervisor's fee.	
Approaches to properties.	15. The board of chosen freeholders shall have full power to lay out, open, construct and improve, when such contemplated work is shown on the approved plans and cross-sections, all necessary approaches to any properties along the line of such road which may have been destroyed or damaged by any alteration in the existing grade, whether within or without the line of such road, and all costs and expenses incurred therefor shall be paid by the said board of chosen freeholders in the same way and manner as other work done under this act is paid for.
Road improvement along State property.	16. Whenever any public road is sought to be improved under the provisions of the fourteenth section of this act, upon which road any lands or real estate owned by the State of New Jersey may front or border, the board of managers, or other body having the control and management of said lands and real estate, are hereby authorized to consent to the improvement of said road and to enter into contract for the same in the manner directed by said section, and to pay for said improvement out of any moneys appropriated to said board of managers or other governing body.
Right to close road temporarily.	17. Whenever it shall be deemed necessary by the State Commission of Public Roads to close a road or section thereof which is being constructed, improved or repaired under this act, in order to permit a proper completion of such work, he shall execute a certificate and file the same with the clerk of the board of chosen freeholders of the county in which such road is situated. Such certificate shall state the necessity for closing such road and describe the portion thereof to be closed; not more than one mile of any road shall be closed at any one time. The board of chosen freeholders shall thereupon close the same to public travel by erecting suitable obstruction and posting conspicuous notice to the effect that the road is closed.
Joint improvement by counties.	18. It shall be lawful for the boards of chosen freeholders of two or more counties to agree by resolutions passed separately in each board, to improve, under the provisions of this act, a road, in whole or in part, which is on the dividing line or runs into or through such counties.
Plans, etc.	In such case they shall make all necessary surveys and prepare proper plans, cross-sections and specifications, which, on approval by resolution

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passed separately by each board, shall be certified to the State Commissioner of Public Roads for action thereon. If approved by said commissioner, each board is authorized to appoint members thereof to serve as a joint committee to advertise for and receive bids, as specified in this act, for said improvement. The bids shall be opened and read in public meeting and thereafter the members of the joint committee shall report the amount of the bids with recommendations to their respective boards. The contract shall be awarded, by resolution of each board voting separately, to the lowest responsible bidder, and shall be approved or rejected, as provided in this act, by the State Commissioner of Public Roads. As nearly as may be possible, all proceedings concerning the improvement under this section, shall conform to those prescribed in this act.

Joint committee.

Bids received and contract awarded.

The contract awarded shall specify the proportion which each county shall bear of the cost of the improvement exclusive of the State's share, and each county shall be liable for that amount alone.

Proportional share of cost stated.

Of the cost of the improvement paid by the State, each county shall receive such proportionate part as it bears of the cost of the improvement to the counties and in the manner as specified for payment to a county for road improvement within its own territory; *provided, however*, that if, in the judgment of any of the boards, parties to said agreement, the burden of the cost of improvement aforesaid is too great to incorporate in the annual tax levy for any one year in that county, then such board, by a resolution adopted by a vote of at least two-thirds of its members, may raise the sum necessary for the payment of its share of the cost by an issue and sale of bonds.

Part received by each county.

Proviso.

19. The provisions of this act shall extend to townships, towns, boroughs, villages, or any municipality or municipalities except cities, and no road shall be built within any city under this act. The common council or other governing body, the assessor or assessors, the mayor or other chief executive officer, the clerk and collector, or other financial officer, respectively, of any township, town, borough, village, or other municipality, shall have the power and shall perform all the duties as are in this act cast upon the board of chosen freeholders, the county board of taxation, the director of the board of chosen freeholders, the county clerk and county collector, respectively. Any of said municipalities may raise by taxation, funds with which to pay for the cost of the construction of any road or roads, or may issue bonds for the payment of the same, in the same manner, as nearly as may be, as the board of chosen freeholders may do under this act, it being the expressed intention of this section to confer upon townships, towns, boroughs, villages or other municipalities, full power to improve any road, or section of road, under the provisions of this act, all proceedings conforming, as nearly as may be practicable, to the provisions of this act. Any such road, or section of road, so constructed by any township, town, borough, village, or other municipality, other than by the county, shall be exclusively under the jurisdiction and control of such township, town, borough, village, or other municipality, and shall be repaired and maintained by such municipality.

Extent of act; cities excepted.

Powers and duties of local officials.

Provision for funds.

Control of roads so built.

20. Whenever any road, or section of road heretofore constructed by the board of chosen freeholders, shall lie within the corporate limits of any city, said road shall be exclusively under the jurisdiction and control of such city, and shall be repaired and maintained by the same; *provided, however*, that this provision shall not extend to roads now maintained under the act entitled "A supplement to an act entitled 'An act to authorize the board of chosen freeholders of any of the several counties in this State to lay out, open, construct, improve and maintain a public road therein,'" approved April seventh, one thousand eight hundred and eighty-eight, approved March twenty-fourth, one thousand eight hundred and ninety-eight. The word city in this and every section of this act shall be held to mean any city having by the last State or government census a population exceeding twelve thousand in number.

Maintenance of roads within cities.

Proviso.

City defined.

Agreement binding.

21. A resolution passed by the township committee of any township, or the governing body of any other municipality, through which said road runs, to pay ten per centum of the cost of said improvement provided for in the first section of this act, shall be binding upon such township, or such other municipality, as the case may be.

Bonds may be issued.

22. Whenever any township or other municipality shall have undertaken to pay ten per centum of the cost of any improvement under the provisions of this act, either by resolution of the township committee or other governing body, or otherwise; and if, in the opinion of any such township committee or other governing body, to be determined by resolution of such township committee or other governing body, it would be too burdensome on the taxpayers of such township or other municipality to place in the tax levy for any fiscal year the portion of the expense of said improvement to be borne by it, then it shall be lawful for such township committee or other governing body to issue a bond or bonds for the amount undertaken to be paid as aforesaid by such township or other municipality.

Sidewalks made to conform to grade.

23. Whenever any public road has been or shall hereafter be improved under the provisions of this act and in the course of improving such road the grade of the roadbed shall have been or shall be changed so that it shall not conform to the grade of the remaining portion of the road, including the sidewalks, it shall be lawful for the municipal authorities of each municipality through which such road passes to cause the remaining portion of such road within the limits of their several municipalities to be graded and formed so as to conform in grade to that established for the roadway constructed under the provisions of this act and to cause such work to be done under the same proceedings and in the same manner as may be provided by law in their several municipalities for the grading of the streets of such municipalities.

Municipal improvements.

The proper municipal authorities of any municipality through which any such road may run shall have full power and authority to make any municipal improvement upon or within any such road within the limits of their several municipalities which may be authorized by law to be made in any of the other public streets or roads of such municipalities; *provided, however,* no such improvement shall be made by such municipal authorities which may in any way interfere with or impair the roadway improved under the provisions of this act without the approval and consent of the board of chosen freeholders of the county within which such road may be located.

Property assessed for benefits.

The cost and expense of any of the public improvements authorized by this section shall, so far as the same can be, be assessed upon the lands and real estate specially benefited by the improvement in proportion to the benefit received; and no lot or parcel of land shall be assessed more than it is so specially benefited, and such assessment shall be made in the same manner and under the same procedure as is directed by law for the making of other assessments for street improvements within every such municipality.

Act how construed.

Nothing in this act contained shall be construed in any way to impose upon any such municipality therein referred to any part of the cost of the maintenance and repair of the roadway of any road improved under the provisions of this act.

Paving improved road.

24. Whenever the owners of fifty-one per centum of the frontage of property abutting any road proposed to be improved under this act by any board of chosen freeholders shall petition the governing body in which their lands and the said road or section of road shall lie, praying that said road or section of road be improved and paved for its entire width from gutter to gutter, and agreeing to pay the entire added cost due to said increased width of improvement and pavement, it shall be lawful for said governing body, by and with the consent of the State Commissioner of Public Roads, to enter into a contract with the said board of chosen freeholders to pay such additional cost, which contract shall fix and prescribe the time and manner of payment by said municipality to said board of chosen freeholders of such added cost.

Agreement to pay cost.

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Such cost and expense so contracted to be paid by the municipality shall be assessed and collected by said municipality upon and from the lands abutting upon said road or section of road so improved in the same manner as other assessments for benefit for improvements are authorized to be assessed and collected in such municipality.

If the improvement contemplated is being undertaken by municipal instead of county authority, such extended improvement shall be authorized by the petition herein provided for, the consent of the municipal authorities of such municipality and the consent of the State Commissioner of Public Roads, and the said additional cost shall be assessed and collected as herein provided.

25. All bonds authorized to be issued by this act by the board of chosen freeholders, or any municipality, shall be known as "Road Improvement Bonds."

Such bonds shall be of such denomination, bear such rate of interest, not exceeding five per centum (5%) per annum, and be payable at such places and such times, not exceeding thirty years from their date (except bonds issued to provide funds for extraordinary repairs or reconstruction which shall be payable in not exceeding five years from their date) and be in such form as the board of chosen freeholders or governing body of any municipality issuing such bonds shall by resolution determine.

Said bonds shall be signed by the director and clerk of the board of chosen freeholders of the county, sealed with the seal of such board and countersigned by the county collector of the county, and in the case of a municipality other than a county shall be signed by the mayor, or chief executive officer, or the chairman or presiding officer of the governing body thereof, and by the clerk thereof, and sealed with the seal of said municipality, and countersigned by the chief financial officer thereof. The said bonds may be either coupon or registered, or coupon bonds with the privilege of registration as to principal only, and of conversion into bonds registered as to both principal and interest, and the faith and credit of the county or municipality issuing them, shall be pledged for their payment. Such bonds shall recite that they are issued pursuant to the authority of this act and of the resolution authorizing the issuance thereof, which shall be conclusive evidence of their validity, and of the regularity of their issuance.

There shall be raised by taxation annually after the issuance of any such bonds a sum sufficient to meet and pay the interest thereon, as the same accrues, and a sum to be paid into a sinking fund which will, together with the accumulations thereof, provide a fund sufficient to meet and pay the principal of said bonds at maturity; *provided, however*, that if such bonds be so issued that they are payable in annual installments substantially equal in amount, the first of which installments shall be payable in two years from the date of such bonds and the last installment to be payable within thirty years from such date, the board or body authorizing such bonds, in lieu of providing for a sinking fund to meet the principal of said bonds shall cause to be raised by taxation in each year in which an installment of principal shall be payable an amount sufficient to meet the said installment, in addition to the annual tax during the life of the bonds to provide for the payment of the interest accruing thereon.

26. In order to enable the Commissioner of Public Roads to execute the provisions of section thirty-seven of an act of the Legislature of this State entitled "An act defining motor vehicles and providing for the registration of the same and the licensing of the drivers thereof; fixing rules regulating the use and speed of motor vehicles; fixing the amount of license and registration fees; prescribing and regulating process and the service thereof and proceedings for the violation of the provisions of the act and penalties for said violations," approved April twelfth, one thousand nine hundred and six, said commissioner is hereby authorized to issue to the public body charged with the maintenance of any improved roads, his

Assessment and collection.

If municipality undertakes improvement.

Name of bonds.

Rate.

Time.

Details of bond issue.

Provision for interest and maturity.

Proviso.

Use of funds received from registration of motor vehicles.

Payment on receipt of proper certificate.

certificate setting forth the amount set aside by him for the repairs of such road from moneys under his control available for road repairs. On receipt of suitable certificate from the proper officer that said road has been repaired, said commissioner is authorized to approve said certificate for payment, and its amount shall then be paid as provided by section eight of this act; or, said commissioner may advertise for sealed proposals for the repair of any such road and award a contract to the lowest responsible bidder, reserving to himself, however, the right to reject any and all bids.

Unusual repairs or reconstruction.

27. Whenever any improved public road in this State is in need of extraordinary repairs or reconstruction, the public body charged with its care shall prepare specifications and any plans and cross-sections necessary to explain and describe the repairs contemplated and forward the same to the State Commissioner of Public Roads. The said commissioner is authorized, in his discretion, to approve of such specification, plans and cross-sections, and to certify what amount of State moneys he will set aside for the repair of such roads. On his approval and issue of certificate as this act provides said public body shall advertise for bids and otherwise proceed as this act directs.

Bonds may be issued.

If such public body shall not have sufficient funds wherewith to pay its share of the cost of such repairs, then it shall be lawful for said public body to issue bonds in a sum not exceeding the sum to be advanced by the State Road Commissioner for and towards such repairs as stated in his certificate, to defray and pay its share of the cost.

Authorities may acquire quarries, gravel pits, etc.

28. It shall be lawful for boards of chosen freeholders, or other governing body charged with the construction, maintenance and repair of roads, to acquire lands for gravel pits, stone quarries, or other natural deposits of road building materials advantageously located for use in their jurisdiction and to pay for the same from funds available for the construction, maintenance and repair of roads.

As to trees.

29. When a road plan involving the treatment of trees or forests abutting upon any road improved under an act bearing a title similar to this act or under this act is to be made, the State Commissioner of Public Roads shall notify the State Board of Forest Park Reservation Commissioners, which shall cause to be prepared such plans and specifications as shall be necessary for the completion of said treatment, the cost of which shall be taken as part of the cost of the road. In all that relates to the choice, planting or care of trees, the decision of the Forest Park Reservation Commission shall be final. In all that affects the location of trees, or the influence upon the road, the decision of the State Commissioner of Public Roads shall be final. If the State Commissioner of Public Roads and a local governing body having authority in respect to roadside trees shall be unable to agree regarding the removal or treatment of any tree standing within the line of any road to be improved, according to this act, the two interests shall submit the case to the Forest Park Reservation Commission, and its decision shall be final and binding upon all parties.

What authority to determine.

30. In case, for any reason, any section or sections of this act shall be questioned in any court and shall be held to be invalid or unconstitutional, no other section or sections or part hereof shall be affected thereby.

Constitutionality of sections.

Repealer. Proviso.

31. All acts and parts of acts inconsistent with the provisions of this act be and the same are hereby repealed; *provided*, that this repealer shall not revive any act heretofore repealed, nor shall any proceeding for the improvement of any public road entered into before the passage of this act abate, but such proceedings shall continue as prescribed in the act under which the improvement was commenced or may be proceeded with under the provisions of this act.

32. This act shall take effect immediately.

Approved April 15, 1912.

Amendments approved April 9, 1913.

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CHAPTER 205.

A SUPPLEMENT to an act entitled "An act to provide for the permanent improvement and maintenance of public roads in this State (Revision of 1912)," approved April fifteenth, nineteen hundred and twelve.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The Commissioner of Public Roads is hereby authorized to improve and to keep in repair any road, or section of road, leading up to any institution or to any park or reservation maintained wholly by the State of New Jersey, and cause plans and specifications for such improvement to be made. If the said commissioner shall decide that said road, or section of road, shall be improved, the same shall be improved in all respects in accordance with the provisions of the act to which this act is a supplement, and the payment of the cost of said improvement and the repair of said road after said improvement shall be paid out of any appropriation made for the improvement and maintenance of roads authorized to be improved or maintained under the act to which this act is a supplement, or for the repair of said roads, out of any moneys derived by the Commissioner of Public Roads pursuant to any law of this State, which said payments shall be made out of the treasury of this State, on the warrant of the Comptroller, on bills duly approved by said Commissioner of Public Roads.

Care of roads leading to State property.

Improvement of roads.

Meeting cost.

2. This act shall take effect immediately.

Approved April 1, 1913.

CHAPTER 305.

A SUPPLEMENT to the act entitled "An act to provide for the permanent improvement and maintenance of public roads in this State (Revision of 1912)," approved April fifteenth, nineteen hundred and twelve.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The estimated amount of all contracts for road improvements awarded in any one year by the board of chosen freeholders, together with the estimated cost of repairs of roads already constructed, shall not exceed (in excess of the amount which any county may raise in any one year) the sum of one hundred thousand dollars, exclusive of the State appropriation for road purposes apportioned to any county, except when the county's share of the cost of the improvement or repair of any road is to be paid for out of the proceeds of a legally authorized bond issue, for the purpose, by any such board of chosen freeholders.

Maximum amount of contracts for roads.

2. This act shall take effect immediately.

Approved April 9, 1913.

CHAPTER 396.

AN ACT to establish a State system of highways, providing for their construction, improvement, maintenance, repair, and regulation of the use thereof and for a road fund and its disbursement in lawful expenditures appertaining to roads.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The State Highway Commission is hereby authorized and directed to establish what shall be known as the State Highway System; a comprehensive

System of roads.

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What scheme to include.

sive scheme of roads, improved or unimproved, and of routes for roads unbuilt, which shall be ultimately a continuous or inter-communicating system of improved State highways throughout the State.

2. It is the intent of this act that the State Highway System shall include: such roads, highways, turnpikes or toll roads as may be later acquired, or any parts or portions thereof, as now are or will form, main-traveled roads of reasonably direct route between the county seats of the several counties of the State; existing improved highways being chief lines of travel between seaside resorts and large centers of population; important roads affording outlets at the boundaries of the State or which, in the judgment of the commission, by the character and amount of travel upon them are in repair and maintenance costs an inequitable burden upon local districts and fall properly in the State Highway System, the Ocean Highway and the Delaware River Drive.

Plans of proposed system.

Distinguishing features.

3. The State Commissioner of Public Roads is hereby directed to have prepared and submit to the State Highway Commissioner a map or plan of the State showing a proposed State Highway System, together with necessary explanatory report upon its scope and merit. Such plan shall distinguish by suitable legend upon it between county, township or other road, whether improved or unimproved with the mileage of each, the character of its construction or improvement and the location and character (as fixed or movable, of wood, steel, concrete-arch, etc.), of its principal bridges. It shall include in the proposed system such roads as are specifically mentioned in this act by name or by location between definitely named places, together with such others as the said commissioner may direct.

Matters to be considered in taking over road.

4. In taking over any road as a State highway, selection by the State Highway Commission shall be guided by the character and amount of travel thereon, its consequent relative importance in the system and with due regard to the mileage of roads heretofore improved in each county and to the burden of maintenance and repair costs therein which it is the intent of this act to relieve. On such basis the distribution of the benefits of this act among the several counties of the State shall be made as equitably as the funds available and circumstances will permit.

Adoption of system.

5. With such modification of the said mapped system as they may elect within the intent of this act, the State Highway Commission shall adopt the same as the State Highway System.

Altering system.*

Within the same restrictions the commission may, from time to time, add to the system, and amend or change the same on account of difficulty or excessive cost of construction or maintenance or for other adequate unforeseen contingency; *provided, however*, that the aggregate mileage of the system shall not exceed fifteen hundred (1,500) miles.

Proviso.

Roads taken over by commissioner.

6. When in their discretion circumstances will permit, the State Highway Commission shall have the State Commissioner of Public Roads take over from the governing body having jurisdiction thereof, and with its assent, any highway, or portion thereof, improved or unimproved, which is included in the Highway System. When so taken over it shall become and be known as a State Highway, and its further improvement, maintenance and repair shall be at the expense of the State and under the jurisdiction of the State Department of Public Roads; *provided, however*, that whenever the governing body or other jurisdiction from which said road is taken over, has rights or benefits by virtue of an understanding, agreement or contract with any street railway company, other company, firm or corporation, to repair, maintain or construct any part of such highway, or to deliver or execute any other service or obligation with respect thereto, the said undertaking shall remain in force and all such contractual or agreement rights and benefits shall pass to and be taken over for the State by the State Department of Public Roads. All the terms, conditions and requirements of such agreements or contracts shall be fulfilled by the State by said street railway company, other company, firm or corporation, in the same manner as if they had been originally made between the State and said companies, firm or corporation.

Proviso.

Fulfillment of obligations.

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7. The State Commissioner of Public Roads shall give to the body having jurisdiction over any highway written and ample notice of intention to take over such highway with the date when the State will assume its care and maintenance. If at the date of said notice such body has executed any contract for the improvement of such highway, the further operation of this act with respect thereto shall be suspended until the completion of such improvement. At such time it shall become a State highway. Notice of intent to assume care of road.
8. Whenever a State highway, or any portion thereof, is eliminated from the State Highway System by resolution of the State Highway Commission, the status of such highway shall revert to that existing prior to the passage of this act and its repair and maintenance to the governing body or bodies within which it lies. Reversion of abandoned roads.
9. The State Commissioner of Public Roads is hereby directed to take charge of the construction, improvement maintenance and repair of State highways, and maintain the same in good order. All work of construction and improvement shall be done in accordance with plans and specifications prepared by the State Department of Public Roads. All work of maintenance and repair shall be done at the expense of the State. Commissioner of roads to take charge.
10. For purposes of administration (and because of the character of their duties and the possible division of the State Highway System into districts), the present State Supervisor of Roads shall be known as the State Highway Engineer and the present assistant State supervisors as division highway engineers. Title of officers.
- When, through absence or disability, the State Commissioner of Public Roads is unable to perform the duties and exercise the powers of such office, the State Highway Engineer (present State Supervisor) shall perform and exercise such duties and powers. Acting commissioner.
11. In addition to the above officials, now authorized by law, the State Commissioner of Public Roads is empowered, when the need (confirmed by the State Highway Commission) arises, to employ at the compensation fixed by law, not more than two additional division highway engineers (competent engineers, one of whom shall have had experience in the design and construction of bridges). He may employ also such draughtsmen, clerical or office help, foremen, laborers and such temporary or permanent resident engineers as shall be needed for the efficient and economical administration and execution of the powers and duties of the State Department of Public Roads. The said resident engineers shall be, whenever practicable and consistent with efficiency, the county engineers of the several counties of the State, and said offices shall not be deemed incompatible. For this purpose the State Commissioner of Public Roads and board of chosen freeholders of any county shall make a written agreement, to be approved by the State Highway Commission, defining the service and duties of said engineer, fixing his compensation and the relative parts of same to be paid by the county and the State and such service may be per year, or part of parts thereof, as need may require; *provided, however*, that the joint compensation by State and county to said engineer shall be in no case less than that received by him as said county engineer, and the time and manner of the payment of this compensation shall be as nearly as possible that now in force; *provided, however*, that said agreement may be terminated by adequate notice in writing by either party, and in case of its lapse, for this or any cause, the status of said engineer, with reference to the county employing him, shall revert in all respects to that existing prior to the passage of this act. Additional engineers. Assistants.
12. The State Commissioner of Public Roads is hereby authorized and empowered to formulate and adopt such rules and regulations and prescribe such duties, for the conduct of the business, work and general administration of the State Department of Public Roads, its officers and employees, as are not expressly provided by this act nor by existing law, and are not inconsistent with the intent or spirit thereof. Except where otherwise provided by this act, or other existing law, all employees and appointees of the said Rules and regulations formulated by commissioner.
- Tenure of subordinates.

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Maximum load, height, and width of vehicles.

department, for cause and after hearing, shall be subject to removal or discharge by the commissioner. He may purchase such materials and equipment as shall be necessary for the competent, efficient and economical administration of the State Department of Public Roads.

13. No person shall drive on any State highway any vehicle weighing, with its load, more than thirty thousand (30,000) pounds, nor more than twelve feet in height from the lower rim of the wheel to the highest point of the vehicle or its load, nor more than nine feet in width over any part of the vehicle or its load.

Tires of motor vehicles

When used on a State highway, no motor vehicle tire shall be fitted with any blocks, hobs, studs or other projections, and no wheels shall be locked so as not to revolve.

No injurious materials allowed.

No person shall place or allow to fall on any State highway any broken glass, pottery or sharp object, nor any substance injurious to the surface of the road or to person, health or property of parties using the same, or residing along the line thereof.

Property along road protected.

No person shall in any way interfere with or injure any road-sign, tree, handrail, wall, bridge, culvert or other public property within the lines of any State highway.

Penalty.

Any person, firm, company or corporation violating any of the above provisions in any manner or method, or who wilfully damages, injures or destroys any such highway or its appurtenances shall be liable to a fine of not less than ten dollars (\$10) nor more than twenty dollars (\$20) for each and every offense together with the costs of prosecution, to be recovered by an action in debt in the name of the State, before any court of competent jurisdiction by the State Department of Public Roads; said fines shall be paid into the State treasury to the credit of the funds available for construction, maintenance and repair of roads.

Consent to use road must be secured.

14. Hereafter no consent, grant or franchise affecting any portion of a State highway, or of any road included in the State Highway System, shall be given for the construction of a railroad or street railway thereon except upon approval of and under conditions acceptable to the State Highway Commission; nor shall any person, firm, company or corporation enter upon or construct any works in or upon any State highway, except under such conditions and regulations, approved by the commission, as the State Commissioner of Public Roads may prescribe. Whenever any encroachment may exist without warrant of law in any road when taken over as a State highway, the State Commissioner of Public Roads shall notify the Attorney-General, who shall proceed to cause the same to be removed as by law provided.

Removal of encroachments.

Penalty.

Any person, firm, company or corporation guilty of any violation of this section shall be liable to a fine not exceeding one hundred dollars (\$100) for each such day's violation, and the costs of prosecution to be recovered by an action in debt in the name of the State before any court of competent jurisdiction by the State Department of Public Roads. Said fines shall be paid to the State Treasury to the credit of the funds available for construction, maintenance and repair of roads.

Violation a trespass.

Any such violation may be removed from any State highway as a trespass by a bill or petition filed by the State Commissioner of Public Roads in the Court of Chancery.

Any privileges granted subject to certain restrictions.

15. For any road in the State Highway System prior to its taking over as a State highway, as provided by this act, no consent, grant or franchise for the laying in or upon it of any railroad or street railway crossing, gas pipe, water pipe, electric conduits, or other piping, telegraph, telephone, electric light or power poles, shall be given except under such restrictions, regulations and conditions as are approved and officially made known by the State Commissioner of Public Roads to the body with authority to issue such privilege. No issue of such consent, grant or franchise by any public body, except as hereinafter provided, shall operate as a waiver of liability in favor of the person, firm, company or corporation

Liability not waived.

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laying or erecting such works in or upon such highway or any portion thereof. Any violators of this provision shall be liable to a fine not in excess of fifty dollars for each day's violation and the costs of prosecution, recoverable by the county or township and payable to the county or township collector to the credit of the appropriation for the construction, maintenance and repair of roads.

Penalty.

16. No State highway shall extend into any city of a population exceeding sixteen thousand in number, as determined by the most recent census, whether taken by the State or the United States Government. The State Commissioner of Public Roads may enter into a written contract with any municipality for the proper maintenance and repair by said municipality of such streets and roads in the same as may form proper connections through said municipality between State highways. Such contracts, before becoming binding, shall be approved by the State Highway Commission and shall terminate on the thirty-first day of October in each and every year.

Cities not included in system.

17. Whenever an unimproved road, or an improved road in need of extensive repairs, included in the State Highway System but not yet taken over is constructed, reconstructed or reimproved, with or without State aid, such road on the completion of the work to the approval of the State Commissioner of Public Roads shall be taken over as a State highway.

Taking over certain roads.

[Section 18 repealed. Chapter 146, Laws of 1913.]

19. For the purpose of extension, construction, improvement, maintenance, repair or straightening of the State Highways, it shall be lawful for the State Commissioner of Public Roads, with the assent and approval by the State Highway Commission of its terms and conditions, to enter into written agreement with any board of chosen freeholders, or other public body, or any person or corporation, for co-operation on an equitable basis of share in cost of such work, and to assume any portion of that cost. Such board or public body may raise their proportionate share of such cost in accordance with the provisions of any law providing for State aid in road improvement or maintenance. Upon approval by the said commissioner of the certificate of the inspector and engineer in charge of the work that the same has been satisfactorily completed in whole or in part, according to contract, plans and specifications, the disbursing officer of said board or body shall pay its share of the whole or partial cost to the State Commissioner of Public Roads, who shall disburse the same for the purposes of this act.

Proposition assumed by State.

How amount raised.

Payment to road commissioner.

The said commissioner for the above purposes and with the approval as aforesaid of the State Highway Commission may enter into a contract with any person, company, firm or corporation, public or private, for the acquisition of any necessary lands, or of gravel pits or other natural deposits of road materials advantageously located to the State highways, and may take title in the name of the State.

Right to acquire necessary material.

20. In the construction, repairs and maintenance of State highways the said commissioner shall possess and exercise, in addition to those conferred by this act, all those rights and powers, not incompatible with his office nor prohibited by law, which are now exercised by overseers of roads and boards of chosen freeholders in road construction, repair and maintenance and, when authorized by resolution of the State Highway Commission, in the acquisition of turnpikes and toll roads.

Additional powers conferred on commissioner.

21. Nothing in this act shall be construed as authorizing the State Department of Public Roads to construct or enter into contracts or agreements for the furnishing, building or rebuilding of bridges, trestles or equivalent structural work, over navigable waters or streams, nor for bridges, or equivalent structures and culverts, generally; *provided, however*, that where the State Commissioner of Public Roads deems the cost of such building, rebuilding or betterment of such structure, according to plans and specifications he approves, as too great a burden for the public body responsible for its care, he may, with approval by the State Highway Com-

Not to build bridges, trestles.

Proviso.

Work done by contract. Plans and specifications.	mission of terms and conditions, enter into agreement with such responsible public body providing for the State's bearing a portion of such costs, but in no case in excess of twenty per centum of that cost.
Proposals invited.	22. All work of construction or building of unimproved roads and of extensive repairs to improved roads, taken over as State highways, shall be by contract. The State Commissioner of Public Roads shall have made a proper survey of the road and have prepared the necessary plans and specifications showing and describing the work to be done and the materials to be supplied and also make estimate of the cost of the construction and improvement in accordance therewith.
Advertisement.	He shall advertise for bids on the work and materials covered by the plans and specifications, and may divide the same into several contracts, but all bids for the whole or subdivided shall be submitted at the one time. Such advertisement shall be by public notice published for at least three weeks before the contract may be awarded, at least once a week in each of two newspapers printed in the county or counties where such road is located, in one other in Trenton, and may be inserted in an American engineering periodical. The advertisements shall give a brief description of work and materials required, specify where plans and specifications can be seen or had, the hour, date and place where the sealed proposals will be received and publicly opened and read, and other pertinent information the commissioner may include.
Rejection of bids.	The commissioner may reject any bid not in accord with the advertisement or specification, or for other irregularity, or may reject any or all bids if the prices for work or materials is excessively above the estimated cost. He shall prepare a list of the bids, including any rejected and the cause therefor, and award the contract to the lowest responsible bidder, subject, however, to its ratification by the State Highway Commission, to whom it shall be submitted, together with the summary of bids, within fifteen days from the date of the award. The award shall be final on written approval of a majority of said commission given separately or in session, or whenever empowered so to do by their resolution, by approval of its presiding officer when other than the said commissioner, and then further endorsed by the State Treasurer.
Award.	A certified check equal to at least ten per centum of the bid must accompany the same drawn to the order of the State Treasurer, and shall be held as security that if awarded the contract, the bidder will deliver the same, within ten days from the ratification of the award, properly signed and secured by a bond as hereinafter set forth. In case of the bidder's failure so to do, said check shall be forfeited to the State as liquidated damages, and shall be applied to funds available for the construction, improvement and maintenance of roads.
Guarantee to accompany bid.	Contracts may provide for partial payments on work of construction or maintenance, but not in excess of eighty per centum of the value of the work done. Where, however, the contract provides that a portion of the work may be deferred with the approval of the State Commissioner of Public Roads, the sum withheld from the contractor may be not less than twenty-five per centum in excess of the value of such deferred work.
Partial payments on account. Deferred work.	23. The funds provided to meet lawful expenditures appertaining to roads, as required under this act or any other law, shall constitute a State Road Fund. It shall include the appropriations made therefor by the Legislature, the receipts from motor vehicle licenses, and from fines for violations of this act and of Chapter 113, Laws of 1906, its amendments and supplements, as therein provided.
State road fund.	24. Expenditures from this fund shall be: For the extension, construction, maintenance and repair of State highways; for State aid to counties and municipalities, as provided by law, in the permanent improvement of roads, in acquisition of turnpikes or toll roads, in maintenance and repair of improved roads and in bridge and culvert work; for the maintenance and administration of the State Department of Public Roads, the salaries or
Authorized expenditures.	

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wages of its lawful officers, clerical, office help and employees, the traveling expenses of such actually and necessarily incurred while in discharge of their official duties, and such other reasonable and proper expenses itemized and reported to the department incurred while actually on the business of the State, as the State Commissioner of Public Roads shall direct and approve.

25. In so far as the appropriation act, or other law, does not provide for any of the above specific purposes, the State Commissioner of Public Roads shall determine the amounts, subject to approval of the State Highway Commission, which shall be apportioned to State highways and for State aid, and said commissioner shall decide within lawful discretion the sums to be apportioned for other purposes. Nothing herein shall authorize a change in any compensation fixed by law.

Discretionary payments.

26. Payments for State aid in improvement or maintenance of roads, or in other authorized grant, and for salaries, wages, expenses of administration or other lawful expenditure shall be made as provided by law.

How payments made.

Payments on lawful contracts entered into by the State Commissioner of Public Roads for construction, maintenance and repair of roads or other allied authorized work, shall be made upon the said commissioner's approval for payment of the certificate of the engineer and inspector in charge of the work. Such certificate shall set forth the amount then due under the contract, and that the work done, service performed and materials furnished fully comply with the terms and requirements of the contract, plans and specifications.

Payments on contracts.

27. At the end of each fiscal year the State Commissioner of Public Roads shall make to the State Comptroller a full financial report showing the available unexpended balances in the several accounts before cited, also all outstanding liabilities, under contracts or other financial obligations to counties, municipalities, person, firm or corporation.

Annual report to Comptroller.

28. In case any clause, proviso or section of this act shall be attacked in any court and shall be declared to be invalid or unconstitutional, the clause, proviso or section so declared to be invalid or unconstitutional shall be excised from this act, but the remainder of the act shall stand.

Constitutionality of sections.

Approved April 8, 1913.

29. All acts or parts of acts inconsistent herewith are repealed and this act shall take effect immediately.

Repealer.

Approved April 15, 1912.

Amendments approved April 8, 1913.

CHAPTER 398.

A FURTHER SUPPLEMENT to an act entitled "An act constituting and appointing a State Highway Commission and defining its powers and duties," approved March thirtieth, one thousand nine hundred and nine.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. There shall be added to the State Highway Commission as an additional member thereof, the State Treasurer.

Treasurer a member of commission. Duties of commission.

2. It is hereby made the further duty of the said commission to establish a State highway system and otherwise to carry into effect the provisions of an act entitled "An act to establish a State system of highways, providing for their construction, improvement, maintenance, repair and regulation of the use thereof, and for a road fund and its disbursement in lawful expenditures appertaining to roads."

3. All acts and parts of acts inconsistent with this act are hereby repealed.

Repealer.

4. This act shall take effect immediately.

Approved April 15, 1912.

CHAPTER 275.

A SUPPLEMENT to an act entitled "An act to establish a State system of highways, providing for their construction, improvement, maintenance, repair, and regulation of the use thereof, and for a road fund and its disbursement in lawful expenditures appertaining to roads," approved April fifteenth, one thousand nine hundred and twelve.

Preamble.

WHEREAS, In pursuance of the provisions of the act to which this is a supplement, the State Commissioner of Public Roads has prepared a map or plan showing a proposed State highway system and submitted the same to the State Highway Commission; the said State Highway Commission has approved said plan;

AND WHEREAS, It is deemed advisable to take over the roads constituting said system in three installments of approximately five hundred miles each, and the first of said installments has been in said plan designated by blue lines;

AND WHEREAS, The said act provides that in their discretion, as the circumstances will permit, the State Highway Commission shall have the State Commissioner of Public Roads take over from the governing body having jurisdiction thereof, and with their assent, such highways, which shall thereafter be maintained and repaired at the expense of the State and under the jurisdiction of the State Department of Public Roads.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

State Highway Commission to take certain roads.

1. The State Highway Commission be authorized and is hereby directed to take over under the said provisions of the act to which this is a supplement the highways designated as blue routes in said plan and known by said commission and the Commissioner of Public Roads as roads included in the first division of said plan, not, however, to exceed five hundred miles, and that said roads so taken over shall, in pursuance with the provisions of the act to which this act is a supplement, be hereafter maintained and repaired at the expense of the State.

Appropriation.

2. An appropriation of two hundred and fifty thousand dollars is hereby made for the further improvement, maintenance and repair of such roads so taken over as provided for in the first section of this act.

3. This act shall take effect immediately.

Approved April 7, 1913.

CHAPTER 350.

AN ACT to repeal an act entitled "An act to enable two or more boards of chosen freeholders, jointly charged by law with the maintenance and repair of any road, when engaged in the reconstruction, rebuilding, changing the grade, or widening thereof, to keep a portion of the same in repair and construct temporary roadways in the same for the accommodation of public travel, during such work, and to issue bonds for the payment of the same," approved January thirtieth, one thousand nine hundred and twelve.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Act repealed.

1. That the act entitled "An act to enable two or more boards of chosen freeholders, jointly charged by law with the maintenance and repair of any road, when engaged in the reconstruction, rebuilding, changing the grade, or widening thereof, to keep a portion of the same in repair and

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construct temporary roadways in the same for the accommodation of public travel, during such work, and to issue bonds for the payment of the same," approved January thirtieth, one thousand nine hundred and twelve, be and the same is hereby repealed.

2. This act shall take effect immediately, but this repealer shall not operate to prevent the completion of any contract or contracts let under authority of said act, nor the issue of bonds to pay any expense incurred as in said act authorized, but such boards may complete said contract or contracts and lawfully issue the bonds as fully as if this repealer had not been passed or approved.

Present contracts and bond issue not affected.

Approved April 1, 1912.

CHAPTER 345.

AN ACT relating to condemnation of toll or turnpike roads, and payment for the same, and for the repair, improvement and maintenance therefor.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. Whenever proceedings to condemn any turnpike or toll road have been or shall be instituted by any board of chosen freeholders and have resulted or shall result in an award and the amount of said award has been or shall be paid by the board of chosen freeholders instituting said proceedings to the persons entitled thereto or into the Court of Chancery as provided by law, it shall be conclusive evidence of the right of said board to receive out of the State roads appropriation the proportion of said award to be paid by the State, that said award has been paid by said board of chosen freeholders as aforesaid and that tolls have been discontinued on said road, and it shall be conclusive evidence of the right of said board to receive out of the State road appropriation the present percentage (one-third) of the State's share of the cost of improving said road or such other percentage of the State's share of such cost as may hereafter be provided by law; that said improvement has been completed and has been authorized by the State Commissioner of stone roads.

Payment of award considered evidence of right to receive State appropriation.

2. All acts and parts of acts inconsistent with the provisions of this act be and the same are hereby repealed, and this act shall take effect immediately.

Repealer.

Approved April 1, 1912.

CHAPTER 336.

AN ACT to enable the board of chosen freeholders of any county in this State to erect, construct and maintain a viaduct connecting streets or roads within such county, and to extend roads to connect with such viaduct, and to acquire lands for the same, and to issue bonds for the payment of the cost of the erection, construction and acquisition thereof.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. Whenever the board of chosen freeholders in any county of this State shall deem it proper and necessary for public travel that a viaduct should be built connecting a street or road, whether municipal or county, with another street or road, whether municipal or county, within such county, and shall be of the opinion that such viaduct should be built at the expense of the county at large, and shall so declare by resolution, then it shall and may be lawful for such board of chosen freeholders to erect, construct and maintain the same at the expense of such county.

Freeholders to build viaduct.

Suitable approaches and connections.

"Viaduct" explained.

Surveys, plans, etc.

Bids asked.

Contract.

Acquire lands by purchase or condemnation.

Total expense

May issue bonds.

Rate.
Time.

Sinking fund.

Repealer.

2. If, in the judgment of such board, it is wise and expedient to erect such viaduct at a point where it does not connect at one or more ends with a public highway, then it shall and may be lawful for such board to construct and maintain a road from either one or more ends of such viaduct, to connect with a street or streets, road or roads of such county or any municipality; and such viaduct proper and the road or roads so constructed shall be considered and classed as a viaduct within the meaning of this act; and wherever in this act the word "viaduct" is used it shall be construed, treated and considered as referring to such viaduct proper, as well as the road or roads which may be constructed at either one or more ends thereof, as aforesaid.

3. If such board should conclude to build such viaduct, it shall cause surveys to be made and fix the location thereof, and cause drawings, plans and specifications to be made therefor and shall advertise in one or more newspapers in such county and in such other manner as the board may direct, for at least two weeks, the time and place of the reception of bids and the terms of the bidding, which said bids shall be enclosed in sealed envelopes and presented in open meeting at the time and place appointed, and the several bids publicly announced, and the contract shall be awarded to the lowest responsible bidder who shall furnish security satisfactory to such board.

4. If it shall become necessary to acquire lands for the building of such viaduct, the board of chosen freeholders of such county is authorized to acquire such lands by gift, grant, purchase or in the manner set out and under the act entitled "An act to regulate the ascertainment and payment of compensation for property condemned or taken for public use," approved March twentieth, one thousand nine hundred (Revision of 1900), and the supplements thereto and amendments thereof, and the title to the lands shall be taken in the name of such board.

5. The total expense of viaducts contracted to be built under this act in any one year shall not exceed one-tenth of one per centum of the ratables of such county as ascertained for the then current fiscal year; nor shall there be issued for the erection of viaducts under this act in any period of five years bonds in the aggregate to exceed one-tenth of one per centum of the ratables as aforesaid.

6. If, in the opinion of the board of chosen freeholders of such county, to place the entire cost of such viaduct in the tax levy for any one fiscal year would be too burdensome to the taxpayers of such county, it shall and may be lawful for such board to issue the bonds of such county to defray the expense thereof, which said bonds shall be of the denomination of one thousand dollars each, and be registered or coupon, as such board may determine, and shall bear interest at a rate not exceeding five per centum per annum, payable semi-annually, and shall run for a period not exceeding thirty years and shall be signed by the director and clerk of such board and countersigned by the county collector, and shall be sold at public sale to the highest bidder for not less than par; and said county shall annually thereafter place in the tax levy a sum sufficient to pay the interest on such bonds as it accrues and shall likewise create a sinking fund for the payment of said bonds at maturity, and place in the tax levy annually thereafter a sum sufficient with the accumulations thereof to pay off and discharge said bonds at maturity.

7. All acts or parts of acts inconsistent herewith are hereby repealed.

8. This act shall take effect immediately.

Approved May 1, 1911.

Amendments approved March 8, 1912.

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CHAPTER 185.

A SUPPLEMENT to an act entitled "An act to enable the board of chosen freeholders of any county in this State to erect, construct and maintain a viaduct between two or more municipalities in such county, connecting streets or roads of such county or municipality, and to extend roads to connect with such viaduct, and to acquire lands for the same, and to issue bonds for the payment of the cost of the erection, construction and acquisition thereof," approved March twenty-eighth, one thousand nine hundred and four.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. If one or more ends of said viaduct as constructed or planned to be constructed under the act to which this is a supplement terminate at and connect with a street or road of any municipality, as shown on an official map or plan of the approaches to such viaduct, and such street or road is not so graded and improved as to continue the grade of such viaduct, and such municipality shall fail, neglect or refuse to grade and improve such street or road in continuation of and according to the grade of said viaduct, then it shall and may be lawful for the board of chosen freeholders of such county as a part of the cost of such viaduct to enter into and upon such street or road and grade and improve the same in continuation of and conformably to the grade of such viaduct, for a distance not to exceed two hundred and fifty feet; *provided*, that the board of chosen freeholders have conferred with the board or body having charge of the streets in any such municipality and arrived at an agreement with such municipal board or body regarding the proposed change of street grades and the repaving of the portion of streets so changed if said streets be paved and have also agreed upon the adjustment of cost or damages which may be incurred by such change of grade.

Freeholders may make proper street connections with viaduct if municipalities fail to do so.

Proviso.

2. If in the construction of said viaduct excavations are made through rock and earth in order to produce the grade, leaving on either or both sides thereof steep rock and earth, which rock and earth are liable to fall in upon said viaduct and make the same dangerous to life and property, it shall and may be lawful for such board to build retaining walls, for such distance along said viaduct, to retain said rock and earth, as in the judgment of the board may be reasonable and proper to make said viaduct safe for public use.

Retaining walls.

3. The work herein authorized shall be done on bids duly advertised for, in accordance with the provisions of, and the moneys wherewith to pay the cost may be raised by the issue of bonds as provided, in the act to which this is a supplement, which cost, and the bonds which may be issued to pay the same, are hereby authorized to be incurred and issued in excess of the limit of expenditure and amount fixed or authorized to be issued under the act to which this is a supplement and any supplement thereto or amendment thereof.

Work done by contract.

Bonds issued.

4. This act shall take effect immediately.

Approved March 27, 1912.

CHAPTER 229.

AN ACT making an appropriation for the use of the State Highway Commission, in laying out and constructing a drive along the Delaware river, to be known as the Delaware River Drive.

WHEREAS, By chapter one hundred and fourteen of the laws of the State of New Jersey of the year one thousand nine hundred and eleven, the

Preamble.

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State Highway Commission, was authorized and directed to have a survey made of a proposed State drive along the Delaware river from Trenton to the New York State line; and

WHEREAS, The State Highway Commission has had such a survey made and has designated the route following the course of the river, and opening up to the people of our State the scenic wonders of the Delaware, unsurpassed by anything in eastern States.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Right of way.

1. The State Highway Commission is hereby authorized and directed to lay out, secure the necessary right of way, and have constructed, a drive along the Delaware river, from Trenton to the New York State line, to be known as the "Delaware River Drive," on the lines of the survey made, and now on file in the office of the Commissioner of Public Highways, which survey was authorized under Chapter 114, Laws of 1911, as the same may be changed by the State Highway Commission from time to time.

Plans and specifications prepared.

2. The State Commissioner of Public Roads shall, under the direction of the State Highway Commission, have prepared the necessary plans and specifications for the purpose of this act, and when approved by the commission, he shall advertise for bids on the work, and material covered by the plans and specifications. He shall have complete supervision of the construction.

Supervision.

Rejection of bids.

3. The commissioner may reject any bid not in accordance with the advertisement or specification, or for other irregularity, or may reject any or all bids if the prices for work or material is excessively above the estimated cost. He shall prepare a list of the bids, including any rejected and the cause therefor, and award the contract to the lowest responsible bidder, subject, however, to its ratification by the State Highway Commission, to whom it shall be submitted, together with the summary of bids, within fifteen days from the date of the award. The award shall be final on written approval of a majority of said commission, given separately or in session, or whenever empowered so to do by their resolution, by approval of its presiding officer, when other than the said commissioner.

Awarding contract.

May be constructed in sections.

4. The said Delaware River Drive may be constructed in sections, the extent of which may be determined by the State Highway Commission, who shall also determine the point or points at which the said construction shall commence and the section or sections that shall be first constructed.

Appropriation.

5. The sum of one million five hundred thousand dollars is hereby appropriated, or so much thereof as may be necessary for the purpose of this act, payable in amounts of three hundred thousand dollars in each consecutive year for five years, commencing with the year one thousand nine hundred and thirteen; *provided, however,* that no part of said appropriation shall be available in any one year in excess of the sum that may be appropriated for the purpose by any annual or supplemental appropriation bill.

Proviso.

6. This act shall take effect immediately.

Approved March 28, 1912.

CHAPTER 173.

A SUPPLEMENT to an act entitled "A further supplement to an act entitled 'An act constituting a State Highway Commission, and defining its powers and duties,' approved March thirtieth, one thousand nine hundred and nine," approved April sixth, one thousand nine hundred and eleven.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Extension of Delaware river drive.

1. The State Highway Commission shall designate a route for a continuous highway, to connect with and extend the highway known as the

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Delaware River Drive, as shown by the map or survey made and now on file in the office of the State Commissioner of Public Roads, commencing at the southerly end of said Delaware River Drive, at the city of Trenton, in the county of Mercer and continuing thence to the city of Cape May, in the county of Cape May, following, so far as practicable, the available and convenient improved roads now constructed, which route shall be as near the Delaware river and Delaware bay as practicable, and shall, under the supervision of the State Commissioner of Public Roads, have a survey made thereof, from which survey a map shall be prepared, showing the proposed route, grades and estimated cost of construction of the foregoing extension of said Delaware River Drive, which map, approved by the said commission, shall be filed in the office of the State Commissioner of Public Roads.

Route.

Survey, map, etc.

2. The State Commissioner of Public Roads is hereby authorized to expend for the purposes of this act, with the approval of the State Highway Commission, the sum of fifteen thousand (15,000) dollars, or so much thereof as may be necessary, from moneys coming into the hands of the said State Commissioner of Public Roads under the provisions of an act entitled "An act defining motor vehicles and providing for the registration of the same and the licensing of the drivers thereof; fixing rules regulating the use and speed of motor vehicles; fixing the amount of license and registration fees; prescribing and regulating process and the service thereof and proceedings for the violation of the provisions of the act and penalties for said violations," approved April twelfth, one thousand nine hundred and six, and the amendments thereof and supplements thereto.

Expenditure for preliminaries.

3. All acts and parts of acts inconsistent herewith are hereby repealed, and this act shall take effect immediately.

Repealer.

Approved April 1, 1913.

CHAPTER 380

AN ACT to authorize the board of chosen freeholders of any county in this State to acquire, improve and maintain roads lying within the corporate limits of any of the municipalities of said county, except cities; to authorize the straightening, widening, changing of location of and vacation of any such road so acquired, and to authorize the acquiring by gift, grant, purchase or condemnation of lands necessary therefor.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The board of chosen freeholders of any county in this State is hereby authorized to acquire from time to time, in the manner hereinafter provided, any road or roads lying within or extending through the corporate limits of any municipality, other than a city, in such county or lying in and extending through two or more municipalities, other than cities, in such county.

Acquire roads.

2. Any board of chosen freeholders desiring to acquire any road or roads as provided and authorized by section one (1) hereof shall do so by the adoption of a resolution or resolutions, from time to time, as in the judgment of said board shall appear to be proper; such resolution shall designate the road or roads to be acquired, naming the municipality or municipalities within or through which such road or roads extend, and to such resolution or resolutions shall be attached a map or maps showing the road or roads sought to be acquired, the lines, location, width and length thereof. A copy of said resolution or resolutions, together with the map or maps of such road or roads attached, certified by the clerk of said board of freeholders shall within thirty days from the adoption of such resolution be filed in the office of the clerk of the county.

Resolution relative to adoption.

Maps, etc.

Copy of resolution filed with county clerk.

Road becomes
county road

3. Upon the adoption of a resolution as hereinbefore provided for and the filing of a certified copy thereof with map attached, in the office of the clerk of the county as provided by section two (2) hereof, the road described in such resolution and shown by such map shall become and be a county road, and the duty of keeping the same in repair shall devolve exclusively upon the board of chosen freeholders, and all other powers and duties respecting such road shall be imposed upon and vested in said board of chosen freeholders; *provided, however*, that nothing herein shall divest the municipal authorities of any municipality in which such road may be, or through which it may extend, of their authority to light such road, or of their power to construct, grade, curb, pave or repair the sidewalks and curbs along said road, nor shall this power of said governing bodies divest the board of chosen freeholders of their right to construct across or under the sidewalks of said road the necessary culverts or other structures necessary for the proper maintenance of such road; *and provided, further*, that the board of chosen freeholders shall not grant any easement, right of way, or use, in, under or over any such county road or roads unless the governing body of each municipality in said county through which said road runs or extends shall consent thereto, and that where the consent of property owners is required under any laws of this State, the same shall also be obtained before such grant of any such easement, right of way or use.

Proviso.

Proviso.

Proposed
changes indi-
cated.

4. Upon the acquirement of any road as herein provided the board of chosen freeholders, may, by resolution, determine to straighten, widen or change the location of such road or any part or portion thereof and to vacate any and all portions of said original road that will by reason of such straightening, widening or relocating be and becoming unnecessary for public use. To any such resolution shall be attached a map showing the original location of such road and the proposed straightening, widening, changing of location and the parts of said road proposed to be vacated. A certified copy of said resolution, upon its adoption, together with a copy of the said map shall be filed in the office of the clerk of the county.

Procuring title
to lands.

The said board of chosen freeholders are hereby authorized and empowered, upon the adoption and filing of such resolution and map as hereinbefore provided, to secure and obtain the lands necessary for such widening, straightening or relocation, by gift, grant, purchase or condemnation, and the title to the said lands shall be taken in the name of such board.

Procedure
under condem-
nation.

If it shall become necessary to take any lands by condemnation, the proceedings therefor shall be pursuant to the provisions of an act entitled "An act to regulate the ascertainment and payment of compensation for property condemned or taken for public use," approved March twentieth, nineteen hundred, and the supplements thereto and amendments thereof.

Improvement
of acquired
roads.

5. After acquiring any road hereunder, the board of chosen freeholders may, from time to time, improve the same, either in whole or in part, and for that purpose, shall cause drawings, plans and specifications to be made, and shall advertise in one or more newspapers in such county, and in such other manner as such board may direct, for two weeks successively, at least once in each week, the first advertisement being at least ten days prior to the receipt of bids, the time and place of the reception of sealed bids and the terms of said bidding by the said board or its committee named for that purpose, and the contract shall be awarded to the lowest responsible bidder who shall furnish security satisfactory to such board.

Proposals
invited.

Contract
awarded.

Provision for
funds.

Proviso.

6. It shall be lawful for the board of chosen freeholders to appropriate and raise annually, by taxation, in the same manner as other county taxes are raised, such sum of money as they shall deem necessary to meet all costs and expenditures to be made under this act, provided that the sum raised and appropriated in any fiscal year shall not exceed one-fourth of one per centum of the ratables of such county as ascertained for the then current fiscal year.

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7. If in the opinion of the board of chosen freeholders, to place the entire cost of the acquisition of lands and improvement of roads, under this act, in the tax levy for any one fiscal year would be too burdensome to the taxpayers of such county, it shall and may be lawful for such board to issue the bonds of the county to defray the expense thereof, either in whole or in part; *provided*, that the aggregate sum raised by taxation, or the issuing of bonds or both, in any fiscal year shall not exceed one-fourth of one per centum of the tax ratables of such county as ascertained for the then current fiscal year.

Bonds may be issued.

Proviso.

The said bonds shall be of the denomination of one thousand dollars each, shall be registered or coupon, as such board may determine, and shall bear interest at a rate not exceeding five (5) per centum per annum, payable semi-annually, and shall run for a period not exceeding thirty years, and shall be signed by the director and clerk of said board, and countersigned by the county collector, and shall be sold at public sale, on bids duly advertised for, to the highest bidder, for not less than par; and such county shall annually thereafter place in the tax levy a sum sufficient to pay the interest on such bonds as it matures, and shall likewise create a sinking fund for the payment of said bonds at maturity, and place in the tax levy annually thereafter a sum sufficient with the accumulations thereof to pay off and discharge said bonds at maturity.

Details of issue.

Rate.
Time.

Sinking fund.

8. This act shall take effect immediately.

Passed April 12, 1912.

CHAPTER 34.

A SUPPLEMENT to an act entitled "An act respecting bridges," approved April tenth, one thousand eight hundred and forty-six.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. It shall not be lawful for any person or persons to drive any kind of carriage or other vehicle, whether propelled by its own power or drawn by one or more horses or mules, or to lead or drive any horses, mules or other cattle over any of the public road bridges of this State, or over any toll bridges or any bridges that are part of any turnpike road of this State, which bridges may be constructed of wood, iron or concrete, or the spans of which may be wood, iron or concrete, at a faster rate than five miles an hour, when the authorities in charge of such bridge shall have placed upon it a notice limiting the pace to the said five miles an hour.

Rate of speed in crossing bridges .

Rate posted.

2. It shall not be lawful for any person or persons to cross any of the said bridges with any vehicle or vehicles, whether propelled by their own power or drawn by horses or mules, that shall weigh with their loads more than two thousand pounds per inch of tire in width, provided that no such vehicle shall weigh, with its load, more than fifteen tons of two thousand pounds each; and provided that nothing contained in this section shall be at any time construed to apply to any street railway car or car operated as a street railway car using any bridge, as herein named.

Weight allowable on bridges.

Proviso.

3. Any person or persons violating the foregoing provisions shall be liable to a penalty of \$10.00 with costs for each and every violation of this statute, which said penalty may be sued for and recovered with costs by any person in any court of competent jurisdiction.

Penalty.

4. All acts and parts of acts inconsistent herewith are hereby repealed, and this act shall take effect immediately.

Repealer.

Approved March 8, 1912.

CHAPTER 35.

AN ACT to authorize the construction of improved roads by State institutions.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Improved roads for State institutions.

Proviso.

Plans, construction, etc.

1. The board of managers or other board or commission having charge of any State institution in this State are hereby authorized to construct or improve any portion of a public road in this State lying between any improved road now or hereafter located on the lands of the State of New Jersey, occupied by such institution, and the improved public road nearest to such institution; *provided, however*, that an appropriation shall first be made for the construction or improvement of any such road.

2. The plans and specifications for any such road shall be approved by the Commissioner of Public Roads of this State and such road shall be constructed or improved under the direction and supervision of such commissioner, as now provided by law.

3. This act shall take effect immediately.

Approved March 8. 1912.

CHAPTER 212.

AN ACT to amend an act entitled "An act to authorize the improvement of public roads or streets in townships of this State," approved March twenty-second, nineteen hundred and one.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Section 1 amended.

Petition for road or street improvements in townships.

Public Notice.

1. Section one of the act to which this is an amendment be and the same is hereby amended to read as follows:

1. It shall be lawful for the township committee of any township of this State, on its own motion by resolution or, on the application in writing to said township committee by some of the owners of the lands fronting on any public road or street in said township, the grade of which has been heretofore established by ordinance of such township, or any section of such road or street, or by some of the owners of lands which would be specially benefited by such improvement, to proceed to improve such road or street or section thereof, not exceeding the limits applied for or specified in the resolution of the township committee by grading, paving, macadamizing, flagging, planking, curbing and guttering, or by regrading, repaving, remacadamizing, reflagging, replanking, recurbing, and reguttering the same in such manner and with such materials as set forth in such resolution or petition, and under the supervision of the township engineer; that on the adoption of such resolution or on receipt of such petition, the said township committee shall immediately thereafter, by resolution, direct the township clerk to advertise the said resolution, application or petition for two weeks, one in each week, successively, in one or more newspapers published in such county and circulating in said township, and to post copies of the said resolution or petition in five of the most public places in said township, designated by the township committee, for ten days prior to the time fixed for the hearing of objections to such improvement; the clerk shall also publish and post, as above, a notice, stating that objections in writing to the said proposed improvement may be filed with him, and of the time and place when and where the township committee will meet to consider such objection, which time shall not be less than ten days after the date of the first publication of such petition and notice as aforesaid; said clerk

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shall also serve, or cause to be served, a like notice on the owners of property along the route of said proposed improvement by delivering a copy of said notice to the owner in person or by leaving the same at his place of residence, or by mailing the same with postage prepaid, directed to said owner at his last known post-office address, or by posting the same upon the premises at least five days previous to the time designated in such notice; *provided*, no assessment shall be set aside or affected by reason of the failure of the township clerk to serve said notice; at the expiration of said time designated for publishing and posting, the township clerk shall file in his office a copy of said resolution or petition and notice, with an affidavit annexed showing that the same has been published and posted as required by this act; at any time after the expiration of the time named in said notice the township committee may proceed to pass an ordinance for said improvement, unless the owners of two-thirds of the property along the route of the proposed improvement object thereto, in which case all costs and expenses incurred by the township committee in such proceeding shall, upon demand of the township committee, be repaid to the township by the petitioners for such improvements, if there be petitioners; and the township committee may make such regulations touching the receiving of any petitions and proceedings thereon, and security for the expenses thereof, as they may deem proper; the ordinance shall be valid if it describes in general language the improvements authorized by the township committee, and shall be passed, engrossed and published in the manner prescribed by law for the passage and publication of other ordinances in townships of this State, and it shall not be necessary to state therein any other matter or thing connected with said improvement.

Proviso.

Rules relative to petitions.

Ordinance.

2. All acts or parts of acts inconsistent with this act, whether general or special, be and the same are hereby repealed.

Repealer.

3. This act shall take effect immediately.

Approved March 28, 1912.

CHAPTER 330.

AN ACT to amend an act entitled "An act to authorize boards of chosen freeholders to lay out, open, widen, straighten, alter, change the grade or location of or otherwise improve any public highway under their control and for that purpose to acquire lands by gift, purchase or condemnation, and to vacate any part of said public highway that may be rendered unnecessary for public travel by the widening, straightening, altering or changing of location of said public highway or any part thereof," approved April thirteenth, nineteen hundred and eight.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. Section one of the act entitled "An act to authorize boards of chosen freeholders to lay out, open, widen, straighten, alter, change the grade or location of or otherwise improve any public highway under their control and for that purpose to acquire lands by gift, purchase or condemnation, and to vacate any part of said public highway that may be rendered unnecessary for public travel by the widening, straightening, altering or changing of location of said public highway or any part thereof," approved April thirteenth, nineteen hundred and eight, be and the same is hereby amended so as to read as follows:

Section 1 amended.

1. The board of chosen freeholders of any county in this State shall have power to lay out, open, widen, straighten, alter, change the grade or location of or otherwise improve any public highway under its control, or any part thereof, and to vacate any part of said public highway that may be rendered unnecessary for public travel by the widening, straightening, altering or changing of location of said highway or any part thereof, and

Freeholders may acquire lands for improvement of highways.

Commissioners
to fix com-
pensation.

to cause a map to be made and filed in the office of the clerk of the county, showing the proposed laying out, opening, widening, straightening, altering, change of grade or location and vacation of any such highway or part thereof, and after such map shall be made and filed as aforesaid, it shall be lawful for said board to acquire by gift or purchase in its corporate name any real estate in the county that may be necessary for that purpose, and in case such board and the owner of any real estate required for such purpose cannot agree upon the price or terms of sale thereof whether by disagreement as to the price or the legal incapacity or absence of the owner, or his inability to convey valid title, or by reason of any other cause whatsoever, it shall be lawful for one of the justices of the Supreme Court or a Circuit Court judge on application in writing made by or on behalf of such board and verified by the oath of the engineer or agent of the board, and filed in the office of the clerk of said county, setting forth a particular description of the land and property required, and the names and residences, if the same can be ascertained, of the owners and occupants, if any there be, and of the persons appearing of record to have any interest in said land and property, to appoint three disinterested freeholders as commissioners to fix the compensation to be paid for such land and property.

Repealer.

2. All acts and parts of acts inconsistent herewith are hereby repealed, and this act shall take effect immediately.

Approved April 1, 1912.

CHAPTER 281.

AN ACT authorizing the board of chosen freeholders of the counties of this State to light with electric lights public highways constructed in part by the State.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Lighting roads.

1. It shall be lawful for the board of chosen freeholders of the counties of this State to light with electric lights any public highway which has, or hereafter shall be constructed in part by the State; *provided, however*, that no contract for lighting shall be made for a longer period than five years, or without first having advertised for bids for at least two weeks in three or more newspapers published and circulating in said county.

Proviso.

2. This act shall take effect immediately.

Approved April 1, 1912.

CHAPTER 254.

A SUPPLEMENT to an act entitled "An act to enable boards of chosen freeholders to acquire, improve and maintain public roads," approved March nineteenth, one thousand eight hundred and eighty-nine.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Petition for
paving roads.

1. Whenever the owners of at least fifty-one per centum (51%) of the frontage of property abutting any road or section of road proposed to be improved, or which has heretofore been improved under the act to which this is a supplement, shall petition the governing body of the municipality in which said lands and the said road or section of road shall lie, praying that said road or section thereof be improved, and paved, for its entire width from gutter to gutter, including the curbing or resetting of curbing where necessary, and agreeing to pay their proportionate share of the entire added cost due to said increase width of improvement, and pave-

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ment, then, upon receipt of said petition, the governing body of said municipality shall furnish the boards of chosen freeholders of said county a certified copy of said petition, upon receipt of which said board of chosen freeholders may, by resolution, direct said improvement to be made; and, before said board of chosen freeholders shall proceed with said improvement so petitioned for, it shall be lawful for and the said governing bodies of said respective municipalities shall enter into a contract with the said board of chosen freeholders to pay such additional costs, which contract shall fix and prescribe the times and manner of payment by said municipality to said board of chosen freeholders of such added cost.

Municipalities to contract with freeholders.

2. Such cost and expense so contracted to be paid by such municipality shall be assessed and collected by said municipality upon and from the lands abutting upon said road or section of road so improved, in the same manner as other assessments for benefits for lands are authorized to be assessed and collected in such municipality.

Meeting expenses .

3. It shall be lawful for the board of chosen freeholders to pay for the entire added cost due to the increased width of such improvement from any unexpended balance or funds in the possession of and belonging to said county, or to issue bonds of the county, to be designated "County Road Improvement Bonds," bearing interest at not more than five per centum per annum, to run for a period not exceeding eleven years, for the purpose of raising the money to pay the cost of such improvement, and all payments made by any municipality on account of said improvement, under such contract with said board of chosen freeholders, as provided for in the first section of this act, shall be credited to the account from which said moneys may have been paid, or, in case bonds have been issued to raise said funds, then said payment made by such municipality shall be deposited in a sinking fund to retire said bonds.

May issue bonds.

Rate.
Time.

4. All acts or parts of acts inconsistent with this act be and the same are hereby repealed, and that this act shall take effect immediately.

Repealer.

Approved March 28, 1912.

CHAPTER 223.

AN ACT to provide for the employment of inmates of penal, correctional and reformatory institutions of this State, or of any political subdivision thereof, upon the roads and highways of the State and its political subdivisions.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The board of chosen freeholders of any county may, in their discretion, order the sheriff to cause persons under sentence in the county jail, or other county penal institution, except females and persons incapable of manual labor, or so many of them as may be required, to be put to work and perform labor on the public roads and highways within such counties.

County prisoners may be ordered to work on roads.

2. The State Commissioner of Public Roads desiring any number of prisoners confined in the State penal institutions to labor on roads or highways, may make application to the Prison Labor Commission for such prisoners, stating the number desired. Said Prison Labor Commission, in conjunction with the governing body of the institution and supervisor from which such prisoners are to be detailed, shall determine the number to be assigned, the cost of transportation and maintenance, the compensation for labor, and may enter into an agreement with said commissioner for the payment of said cost of transportation and maintenance or any portion thereof. The governing body of the institution from which such prisoners are to be detailed shall fix all rules of discipline and shall detail such guards as in its judgment shall be advisable and is hereby authorized to assign such inmates to the work on roads and highways.

Prisoners to work on roads.
Number, transportation, etc.

Rules of discipline.

Supervision
and care of
Prisoners.

Tools.
Discipline
and custody.
Repealer.

[Section 3 repealed. Laws of 1913.]

4. All work herein provided for shall be performed under the supervision of the State Commissioner of Public Roads. The said commissioner may lawfully expend any moneys available for construction, repair and maintenance of roads to meet the cost of housing, feeding and guarding such prisoners while at work, or any portion of such cost, and for the purchase of tools, machinery, supplies and road-building materials needed.

5. The discipline and legal custody of such inmates assigned shall remain under the control of and in the respective institutions.

6. All acts and parts of acts inconsistent herewith are hereby repealed. This act shall take effect immediately.

Approved March 28, 1912.

Amendments approved April 9, 1913.

CHAPTER 413.

AN ACT relating to certain bridges over navigable rivers in this State.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

State to aid
in maintenance
of certain
bridges.

1. Whenever a public bridge over or across a navigable river in the State of New Jersey is not less than four thousand feet in length and connects two municipalities in this State, one-third of the cost of maintenance and upkeep thereof shall be borne and paid by the State of New Jersey from and out of the money at the disposal of the said Road Commissioner, the balance to be paid as heretofore.

Supervision.

2. The duty of supervising and looking after said bridge shall remain in and be vested in the same board or body that now has control thereof and the cost of maintenance and upkeep shall be certified by the presiding officer or clerk of said board to the State Road Commissioner and when countersigned by the State Road Commissioner the proportion to be paid by the State shall be paid in the same manner that other expenses of said State Road Commissioner's office are now paid.

Payment
by State.

Repairs.

3. The State Road Commissioner shall give his approval and consent in writing before any repairs exceeding one hundred dollars in cost shall be done or made on said bridge.

4. This act shall take effect immediately.

Approved April 30, 1912.

CHAPTER 1.

AN ACT to enable two or more boards of chosen freeholders, jointly charged by law with the maintenance and repair of any road, when engaged in the reconstruction, rebuilding, changing the grade, or widening thereof, to keep a portion of the same in repair and construct temporary roadways in the same for the accommodation of public travel, during such work, and to issue bonds for the payment of the same.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Temporary
roadway
during road
improvement.

1. Whenever two or more boards of chosen freeholders of counties of this State, jointly charged by law with the maintenance and repair of any road, engage in the reconstruction, rebuilding, changing the grade, or widening thereof, and it is necessary during such work, in order to accommodate public travel thereon, that a portion of such road should be kept in repair, or a temporary roadway should be constructed therein, it shall and may be lawful for such boards so to do.

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2. If, in the opinion of either of said boards to place in the tax levy for any one year its share of the cost of keeping such portion of said road in repair, or constructing said temporary roadway, would be too burdensome on the taxpayers of the county, it shall and may be lawful for such board to issue the bonds of the county to pay its share of such cost; said bonds to run for a period not exceeding five years, to bear interest at a rate not exceeding five per centum per annum; to be executed in the manner that bonds of such county are usually executed, and to be sold at public or private sale for not less than par and accrued interest. Bond issue.

Time.
Rate.
3. Annually after the issue of such bonds the board shall place in the tax levy a sum sufficient to pay the interest on such bonds as it matures; and also a sum which with the accumulations shall be sufficient to pay off and discharge said bonds at maturity, which shall be deposited in a sinking fund to be created for that purpose. Provision for redemption.
4. If the portion of said road being used for public travel during the work aforesaid be in such bad condition as to be dangerous or unsafe for use, rendering necessary immediate repairs or the construction of a temporary roadway, said boards, without advertising for bids, may let a contract for the work, or any part thereof, or purchase the materials and contract for the labor, or give authority to its joint committee on said improvement so to do; *provided, however*, any contracts entered into by the joint committee shall not be valid unless approved by the directors of the boards, and also by the county supervisors in counties where such office exists. As to immediate repairs.

Proviso.
5. This act shall take effect immediately.

Approved January 30, 1912.

CHAPTER 2.

AN ACT validating bonds heretofore directed to be issued by boards of chosen freeholders of counties of this State for the purchase of turnpike or toll roads and bridges, and validating proceedings taken for the issuance of such bonds and the purchase of such turnpike or toll roads and bridges.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. Whenever any bonds have heretofore been directed to be issued and sold by the board of chosen freeholders of any county, for the purpose of purchasing the whole or any part of any turnpike or toll road, including the bridges forming a part thereof, to an amount not exceeding the purchase price thereof, less the amount actually received therefor, out of the State road appropriation, the said bonds and the proceedings taken for the issuance and sale thereof and for the purchase of such turnpike or toll road and bridges are hereby confirmed and validated, notwithstanding the fact that the amount so received from the State road appropriation was not more than one-third of the cost of such turnpike or toll road exclusive of the cost of the bridges, and notwithstanding any irregularity in said proceedings, provided that the contract for such purchase has been approved by the State Commissioner of Public Roads, and provided that said bonds shall not have been sold or be sold below par, and shall mature in not exceeding thirty years from the date thereof and bear interest at not exceeding five per centum per annum. Such bonds shall be in such denominations and executed in such form and by such officers as may heretofore have been directed or may hereafter be directed by the board of chosen freeholders, and when delivered and paid for shall constitute valid and binding obligations of the county issuing the same. Validating bonds issued for purchase of turnpikes and bridges.

Approval.

Time.
Rate.
2. This act shall take effect immediately.

Approved February 14, 1912.

CHAPTER 57.

A SUPPLEMENT to an act entitled "An act concerning public utilities; to create a Board of Public Utility Commissioners and to prescribe its duties and powers," approved April twenty-first, one thousand nine hundred and eleven.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Provisions for eliminating grade crossings.

1. Whenever a public highway and a railroad cross each other at the same level and it shall appear to the board that such crossing is dangerous to public safety, or that the public travel on such highway is impeded thereby, the Board of Public Utility Commissioners may order the company operating such railroad, within such time as said board may fix, to alter such crossing according to plans to be approved by said board, by substituting therefor a crossing not at the grade of such public highway either by carrying such public highway under or over such railroad, or by reconstructing such railroad under or over such public highway, or by vacating, relocating or changing the lines, width, direction or location of such highway and the opening of a new highway in the place of the one ordered vacated.

Railroads to meet expenses.

2. The entire expense of such alterations, changes, relocation or opening including damages to adjacent property, shall be paid by such railroad, unless a street railway uses such crossing, in which event the board may order not exceeding ten per centum of such expense directly chargeable to the crossing used by the street railway company, to be paid by the company operating such street railway and the balance, to be paid by the company operating such railroad.

Portion of expenses borne by municipalities.

3. The expense of removing, relaying or relocating any municipal water or sewer pipes or other municipal pipes, conduits or subways, shall be borne by the municipality owning the same and also the expense of paving, curbing and flagging the highway constructed as the result of the change of grade.

Portion of expenses borne by public utility companies.

4. Where the order of said board shall require changes in, or the removal of the property or constructions of any telegraph, telephone, gas, electric, lighting, power, water, oil, pipe lines or other company or corporation, copartnership or individual, they shall, at their own expense, move or change the grade or location of their property or constructions in conformity with the order of said board. They shall be deemed parties in interest and shall be given notice of hearing and an opportunity to be heard.

Petition for removal.

5. The board or body having charge of the finances of any municipality wherein any such crossing exists, may present to the Board of Public Utility Commissioners a petition in writing setting forth the facts upon which relief under this act is sought, or upon the petition of any railroad company whose tracks cross or are crossed at grade, or said Board of Public Utility Commissioners may, of its own motion, proceed with respect to any such crossing; whereupon said Board of Public Utility Commissioners shall fix a time and place for a hearing before it and shall give such notice thereof as it shall deem reasonable to the municipality and corporations, copartnership or individuals interested therein and after such hearing, shall determine or order what, if any, alterations to or changes in or connected with such crossing and public highway shall be made.

Hearing.

How powers, etc., are vested.

6. All the powers, supervision, regulation of, jurisdiction and control over public utilities granted by the act to which this is a supplement, are hereby vested in the Board of Public Utility Commissioners and courts of this State, as may be necessary to carry the provisions of this act into effect.

7. This act shall take effect immediately.

Approved March 12, 1913.

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CHAPTER 297.

AN ACT to authorize the board of chosen freeholders of any county in this State to acquire, improve and maintain roads lying within the corporate limits of any of the municipalities of said county, except cities; to authorize the straightening, widening, changing of location of and vacation of any such road so acquired, and to authorize the acquiring by gift, grant, purchase or condemnation of lands necessary therefor.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The board of chosen freeholders of any county in this State is hereby authorized to acquire from time to time, in the manner hereinafter provided, any road or roads lying within or extending through the corporate limits of any municipality, other than a city, in such county or lying in and extending through two or more municipalities, other than cities, in such county. Freeholders may acquire roads in municipalities except cities.
2. Any board of chosen freeholders desiring to acquire any road or roads as provided and authorized in section one (1) hereof shall first give public notice of a public hearing to be held by such board, at a time and place therein to be specified, which notice shall be published for at least ten days prior to the time designated for holding such hearing, in three of the newspapers published and circulating in such county, one whereof shall be published at the county seat of such county and which notice shall also be posted in five public places situate along said road or roads intended to be acquired; at which said hearing any and all persons may appear and present, either orally, or in writing, their objections to the acquisition by said board of such road or roads. Said notice shall contain a brief description of the road or roads intended to be acquired. Procedure.
Notice.
3. Not earlier than ten days after said public hearing said board may, by resolution or resolutions, acquire such road or roads, as in the judgment of said board shall appear to be proper, and shall designate in such resolution, or resolutions, the municipality or municipalities within or through which such road or roads extend, and to such resolution or resolutions shall be attached a map or maps showing the road or roads sought to be acquired, the lines, location, width and length thereof. A copy of said resolution or resolutions, together with the map or maps of such road or roads attached, certified by the clerk of said board of freeholders, shall within ten days from the adoption of such resolution, or resolutions, be filed in the office of the clerk of the county. Resolution of board of freeholders.
4. Upon the adoption of a resolution as hereinbefore provided for and the filing of a certified copy thereof with map attached, as aforesaid, in the office of the clerk of the county as provided by section three (3) hereof, the road described in any such resolution and shown by such map shall become and be a county road, and the duty of keeping the same in repair shall devolve exclusively upon the board of chosen freeholders, and all other powers and duties respecting such road shall be imposed upon and vested in said board of chosen freeholders; *provided, however*, that nothing herein shall divest the municipal authorities of any municipality in which such road may be, or through which it may extend, of their authority to light such road, or of their power to construct, grade, curb pave or repair the sidewalks and curbs along said road, nor shall this power of said governing bodies divest the board of chosen freeholders of their right to construct across or under the sidewalks of said road the necessary culverts or other structures necessary for the proper maintenance of such road; *and provided further*, that the board of chosen freeholders shall not grant any easement, right of way, or use in, under or over any such county road or roads unless the governing body of each municipality Upon filing certified copy becomes county road.

Proviso.

Proviso.

in said county through which said road runs or extends shall consent thereto, and that where the consent of property owners is required under any laws of this State, the same shall also be obtained before such grant of any such easement, right of way or use.

As to changing location of road.

5. Upon the acquirement of any road as herein provided the board of chosen freeholders may, by resolution, determine to straighten, widen or change the location of such road or any part or portion thereof and to vacate any and all portions of said original road that will, by reason of such straightening, widening or relocating, be and become unnecessary for public use. To any such resolution shall be attached a map showing the original location of such road and the proposed straightening, widening, changing of location of and the parts of said road proposed to be vacated. A certified copy of said resolution, upon its adoption, together with a copy of the said map shall be filed in the office of the clerk of the county and shall become and be a public record.

Map shown.

The said board of chosen freeholders is hereby authorized and empowered, upon the adoption and filing of such resolution and a map as provided in this section, to secure and obtain the lands necessary for such widening, straightening or relocation by gift, grant, purchase or condemnation, and the title to the said lands shall be taken in the name of such board.

Secure necessary lands.

If it shall become necessary to take any lands by condemnation, the proceedings therefor shall be pursuant to the provisions of an act entitled "An act to regulate the ascertainment and payment of compensation for property condemned or taken for public use," approved March twentieth, nineteen hundred, and the supplements thereto and amendments thereof.

Condemnation may be taken.

6. After acquiring any road hereunder, the board of chosen freeholders may, from time to time, improve the same, either in whole or in part, after giving public notice of a public hearing to be held by such board, at a time and place therein specified, which notice shall be published for at least ten days prior to the time designated for holding such hearing, in three of the newspapers published and circulating in such county, one whereof shall be a newspaper published at the county seat of such county, and also posted in five public places situate along and on the part of said road or roads intended to be improved, in whole or in part; at which hearing any and all persons may appear and present, either orally, or in writing, their objections to the said improvement by said board of chosen freeholders; and said board of chosen freeholders shall for that purpose cause drawings, plans and specifications to be made true copies of each of which are to be filed in the office of the county clerk of such county at least five days prior to the date of such hearing.

Improvement of road.

Notice.

Hearing.

7. Not earlier than ten days after the hearing provided in section six (6) hereof, said board of chosen freeholders, if it shall determine to make such improvement, shall, by resolution, advertise in three newspapers published and circulating in such county, one of which shall be a newspaper published at the county seat, for four weeks successively, at least once in each week, the last advertisement being at least four days prior to the receipt of bids, the time and place of the reception of sealed bids and the terms of said bidding by the said board or its committee named for that purpose, and the contract shall be awarded to the lowest responsible bidder; each bid to be accompanied by a certified check for ten per centum of the amount of such bid, payable to the county collector, made by the bidder, as a guarantee that if the work is awarded to him he will enter into a contract with said board for the same; and such bidder to whom said work may be awarded shall, on entering into the contract for the same, furnish a bond as security, equal in amount to the amount of his bid, which bond shall be passed upon, as to form and sufficiency, by said board. The time and manner of payment for work done under any contract awarded under this act shall be set forth in said contract, and at least five per centum of the contract price shall not be paid to the contractor

Proposals invited

Contract.

Bond.

Condition.

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until after the expiration of one year from the completion of the work and acceptance thereof by the said board.

8. It shall be lawful for the board of chosen freeholders to appropriate and raise annually, by taxation, in the same manner as other county taxes are raised, such sum or sums of money as they shall deem necessary to meet all costs and expenditures to be made under this act, provided that the sum raised and appropriated in any fiscal year shall not exceed one-tenth of one per centum of the ratables of such county as ascertained for the then current fiscal year.

Moneys necessary raised by taxation.

9. If, in the opinion of the board of chosen freeholders, to place the entire cost of the acquisition of lands and improvement of roads, under this act, in the tax levy for one fiscal year would be too burdensome to the taxpayers of such county, it shall and may be lawful for such board to issue bonds of the county to defray the expense thereof, either in whole or in part; *provided*, that the aggregate sum raised by taxation, or the issuing of bonds, or both, in any fiscal year shall not exceed one-tenth of one per centum of the tax ratables of such county as ascertained for the then current fiscal year.

Bond issue.

Proviso.

The said bonds shall be of the denomination of one thousand dollars each, shall be registered or coupon, as such board may determine, and shall bear interest at a rate not exceeding five (5) per centum per annum, payable semi-annually, and shall run for a period of not exceeding thirty years and shall be signed by the director and clerk of said board and countersigned by the county collector, and shall be sold at public sale, on bids duly advertised for, to the highest bidder, for not less than par; and such county shall annually thereafter place in the tax levy a sum sufficient to pay the interest on such bonds as they mature, and shall likewise create a sinking fund for the payment of said bonds at maturity, and place in the tax levy annually thereafter a sum sufficient, with the accumulations thereof, to pay off and discharge said bonds at maturity.

Denomination.

Rate.

Time.

Sinking fund.

10. Whenever it is proposed to repair or improve any road so acquired, either in whole or in part, as provided for in "An act to provide for the permanent improvement of public roads in this State (Revision of 1905)," approved March twenty-seventh, one thousand nine hundred and five or any of the acts amendatory thereof or supplementary thereto, it shall be necessary to have the consent and approval of the State Commissioner of Public Roads, as provided for in said act, and the said road shall, in such case, be improved in accordance with the provisions of the said act.

Approval by road commissioner.

11. Nothing in this act contained shall be construed to alter, change or impair any contract heretofore let, for the improvement of any road, under the provisions of any act of the Legislature of this State, but said contract and said improvement shall be completed in accordance with the terms and provisions, and the moneys to be provided for the payment of the contract price for such road shall be raised and paid in the manner provided for in the act under which said contract was let and said improvement authorized.

Present proceedings not impaired.

12. All acts and parts of acts inconsistent with the provisions of this act are hereby repealed, and this act shall take effect immediately.

Approved April 9, 1913.

CHAPTER 218.

AN ACT to authorize the board of chosen freeholders of any county in this State to acquire, improve and maintain roads lying within the corporate limits of any city of said county.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. The board of chosen freeholders of any county in this State is hereby authorized to acquire, from time to time, in the manner hereinafter

Freeholders may acquire road within city limits.

- provided, any road or roads lying within or extending through the corporate limits of any city in such county.
2. Any board of chosen freeholders desiring to acquire any road or roads as provided and authorized by section one (1) hereof shall do so by the adoption of a resolution or resolutions, from time to time, as in the judgment of the said board shall appear to be proper; such resolution shall designate the road or roads to be acquired, naming the city or cities within or through which such road or roads extend, and to such resolution or resolutions shall be attached a map or maps showing the road or roads sought to be acquired, the lines, location, width and length thereof. A copy of said resolution or resolutions, together with the map or maps of such road or roads attached, certified by the clerk of said board of freeholders shall, within thirty days from the adoption of such resolution, be filed in the office of the clerk of the county.
3. Upon the adoption of a resolution which must also be duly adopted and consented to by the board or body of such city having charge of the streets and roads in such city, as hereinbefore provided for, and the filing of a certified copy thereof with map attached, in the office of the clerk of the county as provided by section two (2) hereof, the road described in such resolution and shown by such map shall become and be a county road, and the duty of keeping the same in repair shall devolve exclusively upon the board of chosen freeholders, and all other powers and duties respecting such road shall be imposed upon and vested in said board of chosen freeholders; *provided, however*, that nothing herein shall divest the authorities of any city in which such road may be, or through which it may extend, of their authority to light such road, or of their power to construct, grade, curb, pave or repair the sidewalks and curbs along said road, nor shall this power of said governing bodies divest the board of chosen freeholders of their right to construct across or under the sidewalks of said road the necessary culverts or other structures necessary for the proper maintenance of such road; *and provided further*, that the board of chosen freeholders shall not grant any easement, right of way, or use, in, under or over any such county road or roads unless the governing body of each city in said county through which said road runs or extends shall consent thereto, and that where the consent of property owners is required under any laws of this State, the same shall be obtained before such grant of any such easement, right of way or use.
4. After acquiring any road hereunder, the board of chosen freeholders may, from time to time, improve the same, either in whole or in part, and for that purpose shall cause drawings, plans and specifications to be made, and shall advertise in one or more newspapers in such county and in such other manner as such board may direct, for two weeks successively, at least once in each week, the first advertisement being at least ten days prior to the receipt of bids, the time and place of the reception of sealed bids and the terms of said bidding by the said board or its committee named for that purpose, and the contract shall be awarded to the lowest responsible bidder who shall furnish security satisfactory to such board.
5. It shall be lawful for the board of chosen freeholders to appropriate and raise annually, by taxation, in the same manner as other county taxes are raised, such sum of money as they shall deem necessary to meet all costs and expenditures to be made under this act; *provided*, that the sum raised and appropriated in any fiscal year shall not exceed one-fourth of one per centum of the ratables of such county as ascertained for the then current fiscal year.
6. This act shall take effect immediately.
- Approved April 2, 1913.
- Procedure to acquire road.
- Resolution to designate road.
- Maps, etc., filed with county clerk.
- Care of road to devolve on freeholders.
- Proviso.
- Proviso.
- Road improvements.
- Work done by contract.
- Funds.
- Proviso.

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CHAPTER 362.

AN ACT to provide for the preservation of highways and bridges in this State.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. No traction engine trailer, motor or other vehicle, except those exclusively running on rails or tracks, shall be operated upon or over a highway or bridge in this State, nor shall any object be moved over or upon a highway or bridge, upon wheels, rollers or otherwise, except those exclusively running on rails or tracks, in excess of a total weight of twenty-five thousand (25,000) pounds, including vehicle, object or contrivance and load, without first obtaining a permit, mentioned in section three of this act, from the authority or authorities in charge of the maintenance or care of said highway or bridge; nor shall any vehicle be operated or contrivance moved upon or over said highways or bridges which has any flange, ribs, clamps or other objects attached to its wheels or made a part thereof, which will injure or destroy the surface of the highway or bridge, nor shall any such engine, vehicle, object or contrivance for moving heavy loads be operated or moved upon or over any highway or bridge, the weight of which resting upon the surface of said highway or bridge exceeds eight hundred (800) pounds upon any inch in width of the tire, roller, wheel or other object supported upon the surface thereof without first obtaining said permit. The owner, driver, operator or mover of any such engine, vehicle, object or contrivance over said highway or bridge shall, unless relieved from liability in said permit, be responsible for all damages which said highway or bridge may sustain as a result of said action on his part, and the amount thereof may be recovered by the authority or authorities in charge of the maintenance or care of the highway or bridge which is injured, in an action of tort.

Vehicles on roads and bridges.

Permit.

Wheels not to injure road or bridge.

Weight per inch on tire.

Responsibility.

2. No steam traction engine, with or without trailers, and no motor truck carrying a weight in excess of eight thousand (8,000) pounds, including the vehicle, shall be operated upon any highway or bridge at a speed greater than twelve (12) miles an hour; and no vehicle carrying a weight in excess of twelve thousand (12,000) pounds, including the vehicle, shall be operated upon any highway or bridge at a speed greater than eight (8) miles an hour, when such vehicle is equipped with tires partly or entirely made of metal, nor greater than ten (10) miles an hour when the vehicle is equipped with tires of other material than metal.

Weight and speed of vehicles.

3. The State Road Commissioner, or any county or municipal officer, or county or municipal or board or body having charge of the repair and maintenance of any highway or bridge in this State, is hereby authorized, upon proper application in writing, to grant permits for the moving of heavy vehicles, loads, objects or structures over said highways and bridges, which permit, when duly granted, shall authorize such movement. Said permits may be general or may limit the time and the particular highways and bridges which may be used, and may contain any special conditions or provisions which in the opinion of the authority granting the same are necessary for the protection of said highways or bridges from injury. The authorities having charge of any such bridge are hereby authorized to make regulations limiting the speed of any of the vehicles mentioned in this act passing over said bridge to a speed not to exceed six (6) miles an hour, provided notice is conspicuously posted at each end of the bridge affected by such regulation.

Permits for heavy loads.

Moving rate when crossing bridge.

4. Any person violating the provisions of this act or the regulations made or permits granted under authority thereof shall be liable to a fine of not less than ten dollars, nor more than one thousand dollars for each and

Penalties.

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every offense, and said fines shall be paid to the Commissioner of Motor Vehicles for use on State highways or bridges when State highways or bridges are injured, and into the treasury of the county or municipality when any highway or bridge is injured which is under the care of such county or municipality for use on the highways and bridges of such county or municipality in addition to any other moneys that may be available for that purpose.

Exception.

5. This act shall not apply to street railway cars operated upon tracks over such highway or bridge, and shall take effect immediately, and inconsistent acts or parts of all other acts, general or special, are hereby repealed.

Repealer.

Approved April 14, 1913.

CHAPTER 71.

SUPPLEMENT to an act entitled "An act concerning townships" (Revision of 1899), approved March twenty-fourth, eighteen hundred and ninety-nine.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Vacate
highways.

1. And the township committee of any township shall have power and authority, in addition to the powers heretofore conferred upon it by ordinance, to vacate any street, avenue or highway, or any part or section thereof whenever a petition therefor, in writing, shall be presented to the township committee at a meeting thereof signed by at least ten freeholders of the said township, which petition shall state briefly the street, avenue or highway or part or section thereof to be vacated, and upon receipt of said petition by the said township committee or the clerk thereof, said township committee may at any meeting thereof introduce an ordinance which shall go to first reading at such meeting at which it is introduced in compliance with any petition that may be presented for that purpose, and the final reading and passage may be had at the next meeting or adjourned meeting of the said township committee, provided the next meeting or adjourned meeting is held three days subsequent to the meeting at which said ordinance is introduced.

Petition.

Ordinance.

2. This act shall take effect immediately.

Approved March 12, 1913.

CHAPTER 361.

A SUPPLEMENT to an act entitled "An act concerning public utilities, to create a board of public utility commissioners and prescribe its duties and powers," approved April twenty-first, one thousand nine hundred and eleven.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

Use of
bridges by
trolley com-
panies.

1. Whenever any street railway company now or hereafter operates its cars upon and through any street or highway in this State in which a bridge forms a connecting link, and it has a franchise to lay its tracks in such street on either side of such bridge, but has no legal authority to lay its tracks on such bridge or cross the same, or its right to cross such bridge is disputed, and the municipality or municipalities owning and controlling such bridge cannot agree with the street railway company as to the terms and conditions of the use of such bridge by the street railway company, then it shall be lawful for said street railway company, or the municipality or municipalities aforesaid, through its or their body or bodies having charge of its or their bridges, or any taxpayer of

In case of
dispute.

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the municipality in which such bridge or part thereof is located, to apply to the board of public utility commissioners for a direction that said street railway company lay its tracks, wires and appurtenances on such bridge and operate its cars thereon for the convenience of the public, and to fix the terms and conditions of the user of such bridge by said street railway company.

Apply to utility commission.

2. On the hearing of such application, and upon notice as prescribed by the act to which this is a supplement, the parties in interest shall be heard by said commissioners, and if in their opinion the use of such bridge by the street railway company is a public necessity, they shall by order (a) direct said street railway company to lay its tracks, wires and appurtenances on such bridge, and to operate its cars thereon; (b) fix the period of years that said street railway company shall use such bridge as aforesaid, without further order or modification, which period of use shall be for no longer time than the period for which the company is entitled to use its tracks, on either side of such bridge, and in any event for no longer than the period limited by law for the granting of franchises, at the termination of which period so fixed all rights of said street railway company, its successors and assigns, shall cease, determine and be at an end; and (c) fix the annual compensation, if any, to be paid by the street railway company to the municipality or municipalities operating, owning or controlling such bridge.

Hearing.

Determination.

3. Upon the making of the order aforesaid, said street railway company, within the time to be fixed in said order, shall lay its tracks, wires and appurtenances on such bridge and use same for public travel. Should said street railway company or the municipality or municipalities aforesaid feel aggrieved by the order of said commissioners as to compensation, said order may be reviewed in the manner provided by the act to which this is a supplement. Should the said commissioners order the street railway company to lay its tracks, wires and appurtenances on such bridge and to operate its cars thereon, but refuse for any reason to determine the compensation, if any, to be paid by the street railway company to the municipality or municipalities owning such bridge for the use thereof, then jurisdiction is hereby given to the Chancellor of this State, on the petition or bill of the municipality or municipalities owning such bridge or such street railway company, by order or decree to fix and determine the compensation, if any, to be paid by the street railway company to the municipality or municipalities owning such bridge for its use thereof. But notwithstanding such proceeding to review the amount of compensation to be paid, said street railway company shall proceed to lay its tracks on such bridge and the wires and appurtenances and operate its cars thereon, pending the controversy as to the amount of compensation to be paid.

Company to lay tracks, etc.

Order may be reviewed.

Fixing compensation.

4. The words "municipality" and "municipalities" in this act shall be taken as meaning any county or counties, city or cities, town or towns, townships or boroughs.

Definitions.

5. This act shall take effect immediately.

Approved April 14, 1913.

APPENDIX C.

NUMBER OF TONS OF STONE PER MILE REQUIRED TO BUILD THE FOLLOWING DEPTHS AND WIDTHS.

For the information of intending road builders, we have compiled the following tables, which approximate the number of tons of thoroughly rolled stone necessary to construct each mile at the designated depths and widths.

The basis is 3,000 tons of loose stone or 3,500 tons of compressed stone for a road one mile long, sixteen feet wide and eight inches deep. A road eight inches deep, when finished, will have required at least ten inches of stone. It should be placed in two layers of five inches each, and each layer rolled down to four inches. Then the application of the three-quarter inch and screenings will bring the road to the prescribed depth; for other thickness the stone should be placed in proportion to the intended finished depths.

An observance of this rule will insure the contract thickness for the roadbed, and save the sometimes necessary expense of resurfacing before acceptance from the contractor.

A road	8 feet wide and	4 inches deep will require	875 tons of stone per mile.
" 8 "	" 6 "	" "	1,312½
" 8 "	" 8 "	" "	1,750
" 8 "	" 10 "	" "	2,187½
" 8 "	" 12 "	" "	2,625
" 9 "	" 4 "	" "	984¾
" 9 "	" 6 "	" "	1,476 ⁹ / ₁₆
" 9 "	" 8 "	" "	1,968¾
" 9 "	" 10 "	" "	2,460 ¹⁵ / ₁₆
" 9 "	" 12 "	" "	2,953¾
" 10 "	" 4 "	" "	1,093¾
" 10 "	" 6 "	" "	1,640¾
" 10 "	" 8 "	" "	2,187½
" 10 "	" 10 "	" "	2,734¾
" 10 "	" 12 "	" "	3,281¼

A road	11 feet wide and	4 inches deep will require	1,203¾ tons of stone per mile.
" 11 "	" 6 "	" "	1,804 ¹¹ / ₁₆
" 11 "	" 8 "	" "	2,406¾
" 11 "	" 10 "	" "	3,007 ¹³ / ₁₆
" 11 "	" 12 "	" "	3,609¾
" 12 "	" 4 "	" "	1,312½
" 12 "	" 6 "	" "	1,968¾
" 12 "	" 8 "	" "	2,625
" 12 "	" 10 "	" "	3,281¼
" 12 "	" 12 "	" "	3,937½

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A	road	13	feet	wide	and	4	inches	deep	will	require	1,421 $\frac{7}{8}$	tons	of	stone	per	mile.
"	13	"	"	"	"	6	"	"	"	"	2,132 $\frac{13}{16}$	"	"	"	"	"
"	13	"	"	"	"	8	"	"	"	"	2,843 $\frac{3}{4}$	"	"	"	"	"
"	13	"	"	"	"	10	"	"	"	"	3,554 $\frac{11}{16}$	"	"	"	"	"
"	13	"	"	"	"	12	"	"	"	"	4,265 $\frac{5}{8}$	"	"	"	"	"
"	14	"	"	"	"	4	"	"	"	"	1,531 $\frac{1}{4}$	"	"	"	"	"
"	14	"	"	"	"	6	"	"	"	"	2,296 $\frac{7}{8}$	"	"	"	"	"
"	14	"	"	"	"	8	"	"	"	"	3,062 $\frac{1}{2}$	"	"	"	"	"
"	14	"	"	"	"	10	"	"	"	"	3,828 $\frac{1}{2}$	"	"	"	"	"
"	14	"	"	"	"	12	"	"	"	"	4,593 $\frac{3}{4}$	"	"	"	"	"
"	15	"	"	"	"	4	"	"	"	"	1,640 $\frac{5}{8}$	"	"	"	"	"
"	15	"	"	"	"	6	"	"	"	"	2,460 $\frac{15}{16}$	"	"	"	"	"
"	15	"	"	"	"	8	"	"	"	"	3,281 $\frac{1}{4}$	"	"	"	"	"
"	15	"	"	"	"	10	"	"	"	"	4,101 $\frac{9}{16}$	"	"	"	"	"
"	15	"	"	"	"	12	"	"	"	"	4,921 $\frac{7}{8}$	"	"	"	"	"
"	16	"	"	"	"	4	"	"	"	"	1,750	"	"	"	"	"
"	16	"	"	"	"	6	"	"	"	"	2,625	"	"	"	"	"
"	16	"	"	"	"	8	"	"	"	"	3,500	"	"	"	"	"
"	16	"	"	"	"	10	"	"	"	"	4,375	"	"	"	"	"
"	16	"	"	"	"	12	"	"	"	"	5,250	"	"	"	"	"
"	17	"	"	"	"	4	"	"	"	"	1,859 $\frac{3}{8}$	"	"	"	"	"
"	17	"	"	"	"	6	"	"	"	"	2,789 $\frac{1}{16}$	"	"	"	"	"
"	17	"	"	"	"	8	"	"	"	"	3,718 $\frac{3}{4}$	"	"	"	"	"
"	17	"	"	"	"	10	"	"	"	"	4,648 $\frac{7}{16}$	"	"	"	"	"
"	17	"	"	"	"	12	"	"	"	"	5,578 $\frac{1}{2}$	"	"	"	"	"
"	18	"	"	"	"	4	"	"	"	"	1,968 $\frac{3}{4}$	"	"	"	"	"
"	18	"	"	"	"	6	"	"	"	"	2,953 $\frac{1}{2}$	"	"	"	"	"
"	18	"	"	"	"	8	"	"	"	"	3,937 $\frac{1}{2}$	"	"	"	"	"
"	18	"	"	"	"	10	"	"	"	"	4,921 $\frac{7}{8}$	"	"	"	"	"
"	18	"	"	"	"	12	"	"	"	"	5,906 $\frac{1}{4}$	"	"	"	"	"
"	19	"	"	"	"	4	"	"	"	"	2,078 $\frac{1}{2}$	"	"	"	"	"
"	19	"	"	"	"	6	"	"	"	"	3,117 $\frac{3}{16}$	"	"	"	"	"
"	19	"	"	"	"	8	"	"	"	"	4,156 $\frac{1}{4}$	"	"	"	"	"
"	19	"	"	"	"	10	"	"	"	"	5,195 $\frac{5}{16}$	"	"	"	"	"
"	19	"	"	"	"	12	"	"	"	"	6,234 $\frac{3}{8}$	"	"	"	"	"
"	20	"	"	"	"	4	"	"	"	"	2,187 $\frac{1}{2}$	"	"	"	"	"
"	20	"	"	"	"	6	"	"	"	"	3,281 $\frac{1}{4}$	"	"	"	"	"
"	20	"	"	"	"	8	"	"	"	"	4,375	"	"	"	"	"
"	20	"	"	"	"	10	"	"	"	"	5,468 $\frac{3}{4}$	"	"	"	"	"
"	20	"	"	"	"	12	"	"	"	"	6,562 $\frac{1}{2}$	"	"	"	"	"

TABLES.

As many persons interested in the construction of stone roads are asking questions about their cost, we enclose a table to show at a glance the number of square yards at different widths in a mile of road; also the cost at different widths, and various prices per square yard. Any variations from these prices can be quickly ascertained by adding, subtracting, multiplying and dividing for a less or greater width. For example, a road eight feet wide has 4,693 1-3 square yards in one mile. To obtain the number of square yards in a road having a width of nine feet, add one-eighth to the foregoing figures, and in one having a width of seven feet, subtract one-eighth; in one of twice the width given in the table, multiply by two.

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SQUARE YARDS IN ONE MILE OF

8 feet in width,	4,693 $\frac{3}{4}$	square yards.
10 "	5,866 $\frac{2}{3}$	"
12 "	7,040	"
14 "	8,213 $\frac{1}{2}$	"
16 "	9,386 $\frac{2}{3}$	"
18 "	10,560	"
8 feet wide, or 4,693 $\frac{3}{4}$ square yards, at 25c. per sq. yd.....	\$1,173	33 $\frac{1}{3}$
10 " 5,866 $\frac{2}{3}$ " 25c. "	1,466	66 $\frac{2}{3}$
12 " 7,040 " 25c. "	1,760	00
14 " 8,213 $\frac{1}{2}$ " 25c. "	2,053	33 $\frac{1}{3}$
16 " 9,386 $\frac{2}{3}$ " 25c. "	2,346	66 $\frac{2}{3}$
18 " 10,560 " 25c. "	2,640	00
8 " 4,693 $\frac{3}{4}$ " 30c. "	1,408	00
10 " 5,866 $\frac{2}{3}$ " 30c. "	1,760	00
12 " 7,040 " 30c. "	2,112	00
14 " 8,213 $\frac{1}{2}$ " 30c. "	2,464	00
16 " 9,386 $\frac{2}{3}$ " 30c. "	2,816	00
18 " 10,560 " 30c. "	3,168	00
8 " 4,693 $\frac{3}{4}$ " 35c. "	1,642	66 $\frac{2}{3}$
10 " 5,866 $\frac{2}{3}$ " 35c. "	2,053	33 $\frac{1}{3}$
12 " 7,040 " 35c. "	2,464	00
14 " 8,213 $\frac{1}{2}$ " 35c. "	2,874	66 $\frac{2}{3}$
16 " 9,386 $\frac{2}{3}$ " 35c. "	3,285	33 $\frac{1}{3}$
18 " 10,560 " 35c. "	3,696	00
8 " 4,693 $\frac{3}{4}$ " 40c. "	1,877	33 $\frac{1}{3}$
10 " 5,866 $\frac{2}{3}$ " 40c. "	2,346	66 $\frac{2}{3}$
12 " 7,040 " 40c. "	2,816	00
14 " 8,213 $\frac{1}{2}$ " 40c. "	3,285	33 $\frac{1}{3}$
16 " 9,386 $\frac{2}{3}$ " 40c. "	3,754	66 $\frac{2}{3}$
18 " 10,560 " 40c. "	4,224	00
8 " 4,693 $\frac{3}{4}$ " 45c. "	2,112	00
10 " 5,866 $\frac{2}{3}$ " 45c. "	2,640	00
12 " 7,040 " 45c. "	3,168	00
14 " 8,213 $\frac{1}{2}$ " 45c. "	3,696	00
16 " 9,386 $\frac{2}{3}$ " 45c. "	4,224	00
18 " 10,560 " 45c. "	4,752	00
8 " 4,693 $\frac{3}{4}$ " 50c. "	2,346	66 $\frac{2}{3}$
10 " 5,866 $\frac{2}{3}$ " 50c. "	2,933	33 $\frac{1}{3}$
12 " 7,040 " 50c. "	3,520	00
14 " 8,213 $\frac{1}{2}$ " 50c. "	4,106	66 $\frac{2}{3}$
16 " 9,386 $\frac{2}{3}$ " 50c. "	4,693	33 $\frac{1}{3}$
18 " 10,560 " 50c. "	5,280	00
8 " 4,693 $\frac{3}{4}$ " 55c. "	2,581	33 $\frac{1}{3}$
10 " 5,866 $\frac{2}{3}$ " 55c. "	3,226	66 $\frac{2}{3}$
12 " 7,040 " 55c. "	3,872	00
14 " 8,213 $\frac{1}{2}$ " 55c. "	4,517	33 $\frac{1}{3}$
16 " 9,386 $\frac{2}{3}$ " 55c. "	5,162	66 $\frac{2}{3}$
18 " 10,560 " 55c. "	5,808	00
8 " 4,693 $\frac{3}{4}$ " 60c. "	2,816	00
10 " 5,866 $\frac{2}{3}$ " 60c. "	3,520	00
12 " 7,040 " 60c. "	4,224	00
14 " 8,213 $\frac{1}{2}$ " 60c. "	4,928	00
16 " 9,386 $\frac{2}{3}$ " 60c. "	5,632	00
18 " 10,560 " 60c. "	6,336	00

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8	feet wide, or	4,693 $\frac{3}{4}$	square yards, at	65c. per sq. yd.....	3,050 66 $\frac{2}{3}$
10	"	5,866 $\frac{2}{3}$	"	65c. "	3,813 33 $\frac{1}{3}$
12	"	7,040	"	65c. "	4,576 00
14	"	8,213 $\frac{3}{4}$	"	65c. "	5,338 66 $\frac{2}{3}$
16	"	9,386 $\frac{2}{3}$	"	65c. "	6,101 33 $\frac{1}{3}$
18	"	10,560	"	65c. "	6,864 00
8	"	4,693 $\frac{3}{4}$	"	70c. "	3,285 33 $\frac{1}{3}$
10	"	5,866 $\frac{2}{3}$	"	70c. "	4,106 66 $\frac{2}{3}$
12	"	7,040	"	70c. "	4,928 00
14	"	8,213 $\frac{3}{4}$	"	70c. "	5,749 33 $\frac{1}{3}$
16	"	9,386 $\frac{2}{3}$	"	70c. "	6,570 66 $\frac{2}{3}$
18	"	10,560	"	70c. "	7,392 00
8	"	4,693 $\frac{3}{4}$	"	75c. "	3,520 00
10	"	5,866 $\frac{2}{3}$	"	75c. "	4,400 00
12	"	7,040	"	75c. "	5,280 00
14	"	8,213 $\frac{3}{4}$	"	75c. "	6,160 00
16	"	9,386 $\frac{2}{3}$	"	75c. "	7,040 00
18	"	10,560	"	75c. "	7,920 00
8	"	4,693 $\frac{3}{4}$	"	80c. "	3,754 66 $\frac{2}{3}$
10	"	5,866 $\frac{2}{3}$	"	80c. "	4,693 33 $\frac{1}{3}$
12	"	7,040	"	80c. "	5,632 00
14	"	8,213 $\frac{3}{4}$	"	80c. "	6,570 66 $\frac{2}{3}$
16	"	9,386 $\frac{2}{3}$	"	80c. "	7,509 33 $\frac{1}{3}$
18	"	10,560	"	80c. "	8,448 00
8	"	4,693 $\frac{3}{4}$	"	85c. "	3,989 33 $\frac{1}{3}$
10	"	5,866 $\frac{2}{3}$	"	85c. "	4,986 66 $\frac{2}{3}$
12	"	7,040	"	85c. "	5,984 00
14	"	8,213 $\frac{3}{4}$	"	85c. "	6,981 33 $\frac{1}{3}$
16	"	9,386 $\frac{2}{3}$	"	85c. "	7,978 66 $\frac{2}{3}$
18	"	10,560	"	85c. "	8,976 00
8	"	4,693 $\frac{3}{4}$	"	90c. "	4,224 00
10	"	5,866 $\frac{2}{3}$	"	90c. "	5,280 00
12	"	7,040	"	90c. "	6,336 00
14	"	8,213 $\frac{3}{4}$	"	90c. "	7,392 00
16	"	9,386 $\frac{2}{3}$	"	90c. "	8,448 00
18	"	10,560	"	90c. "	9,504 00
8	"	4,693 $\frac{3}{4}$	"	95c. "	4,458 66 $\frac{2}{3}$
10	"	5,866 $\frac{2}{3}$	"	95c. "	5,573 33 $\frac{1}{3}$
12	"	7,040	"	95c. "	6,688 00
14	"	8,213 $\frac{3}{4}$	"	95c. "	7,802 66 $\frac{2}{3}$
16	"	9,386 $\frac{2}{3}$	"	95c. "	8,917 33 $\frac{1}{3}$
18	"	10,560	"	95c. "	10,032 00
8	"	4,693 $\frac{3}{4}$	"	\$1.00 "	4,693 33 $\frac{1}{3}$
10	"	5,866 $\frac{2}{3}$	"	1.00 "	5,866 66 $\frac{2}{3}$
12	"	7,040	"	1.00 "	7,040 00
14	"	8,213 $\frac{3}{4}$	"	1.00 "	8,213 33 $\frac{1}{3}$
16	"	9,386 $\frac{2}{3}$	"	1.00 "	9,386 66 $\frac{2}{3}$
18	"	10,560	"	1.00 "	10,560 00

TABLE FOR GRAVEL.

Table showing number of cubic yards of gravel required in the construction of one mile of gravel road, of widths varying from 6 feet to 20 feet, and depths from 6 to 12 inches. The within quantities should be multiplied by $1\frac{1}{2}$ to give the number of cubic yards of loose gravel required to make the within depths of compact gravel.

ONE MILE IN LENGTH.	Number of feet in width.	Number of cubic yards in road 6 inches deep.	Number of cubic yards in road 7 inches deep.	Number of cubic yards in road 8 inches deep.	Number of cubic yards in road 9 inches deep.	Number of cubic yards in road 10 inches deep.	Number of cubic yards in road 11 inches deep.	Number of cubic yards in road 12 inches deep.
One mile,	6 feet wide.....	586 $\frac{2}{3}$	684 $\frac{4}{9}$	782 $\frac{2}{9}$	880	977 $\frac{7}{9}$	1,075 $\frac{5}{9}$	1,173 $\frac{1}{3}$
One mile,	7 feet wide.....	684 $\frac{4}{9}$	798 $\frac{14}{27}$	912 $\frac{10}{27}$	1,026 $\frac{2}{3}$	1,140 $\frac{20}{27}$	1,254 $\frac{22}{27}$	1,368 $\frac{8}{9}$
One mile,	8 feet wide.....	782 $\frac{2}{9}$	912 $\frac{10}{27}$	1,042 $\frac{25}{27}$	1,173 $\frac{1}{3}$	1,303 $\frac{10}{27}$	1,434 $\frac{2}{27}$	1,564 $\frac{4}{9}$
One mile,	9 feet wide.....	880	1,026 $\frac{2}{3}$	1,173 $\frac{1}{3}$	1,320	1,466 $\frac{2}{3}$	1,613 $\frac{1}{3}$	1,760
One mile,	10 feet wide.....	977 $\frac{7}{9}$	1,140 $\frac{20}{27}$	1,303 $\frac{10}{27}$	1,466 $\frac{2}{3}$	1,629 $\frac{17}{27}$	1,792 $\frac{10}{27}$	1,955 $\frac{5}{9}$
One mile,	11 feet wide.....	1,075 $\frac{5}{9}$	1,254 $\frac{22}{27}$	1,434 $\frac{2}{27}$	1,613 $\frac{1}{3}$	1,792 $\frac{10}{27}$	1,971 $\frac{23}{27}$	2,151 $\frac{1}{9}$
One mile,	12 feet wide.....	1,173 $\frac{1}{3}$	1,368 $\frac{8}{9}$	1,564 $\frac{4}{9}$	1,760	1,955 $\frac{5}{9}$	2,151 $\frac{1}{9}$	2,346 $\frac{2}{3}$
One mile,	13 feet wide.....	1,271 $\frac{1}{9}$	1,482 $\frac{28}{27}$	1,694 $\frac{22}{27}$	1,906 $\frac{2}{3}$	2,118 $\frac{4}{27}$	2,330 $\frac{10}{27}$	2,542 $\frac{2}{9}$
One mile,	14 feet wide.....	1,368 $\frac{8}{9}$	1,597 $\frac{1}{27}$	1,825 $\frac{5}{27}$	2,053 $\frac{1}{3}$	2,281 $\frac{13}{27}$	2,509 $\frac{17}{27}$	2,737 $\frac{7}{9}$
One mile,	15 feet wide.....	1,466 $\frac{2}{3}$	1,711 $\frac{1}{9}$	1,955 $\frac{5}{9}$	2,200	2,444 $\frac{4}{9}$	2,688 $\frac{8}{9}$	2,933 $\frac{1}{3}$
One mile,	16 feet wide.....	1,564 $\frac{4}{9}$	1,825 $\frac{5}{27}$	2,085 $\frac{25}{27}$	2,346 $\frac{2}{3}$	2,607 $\frac{11}{27}$	2,868 $\frac{4}{27}$	3,128 $\frac{8}{9}$
One mile,	17 feet wide.....	1,662 $\frac{2}{9}$	1,919 $\frac{7}{27}$	2,216 $\frac{8}{27}$	2,493 $\frac{1}{3}$	2,770 $\frac{10}{27}$	3,047 $\frac{11}{27}$	3,324 $\frac{4}{9}$
One mile,	18 feet wide.....	1,760	2,053 $\frac{1}{3}$	2,346 $\frac{2}{3}$	2,640	2,933 $\frac{1}{3}$	3,226 $\frac{2}{3}$	3,520
One mile,	19 feet wide.....	1,857 $\frac{7}{9}$	2,167 $\frac{11}{27}$	2,477 $\frac{1}{27}$	2,786 $\frac{2}{3}$	3,096 $\frac{8}{27}$	3,405 $\frac{28}{27}$	3,715 $\frac{5}{9}$
One mile,	20 feet wide.....	1,955 $\frac{5}{9}$	2,281 $\frac{13}{27}$	2,607 $\frac{17}{27}$	2,933 $\frac{1}{3}$	3,259 $\frac{7}{27}$	3,585 $\frac{5}{27}$	3,911 $\frac{1}{9}$

THE FOLLOWING TABLE SHOWS THE NUMBER OF MILES OF ROAD BUILT IN EACH COUNTY, IN EACH YEAR, SINCE THE PASSAGE OF THE STATE AID LAW, ALSO THE TOTAL NUMBER OF MILES BUILT EACH YEAR AND THE TOTAL NUMBER OF MILES BUILT IN EACH COUNTY.

COUNTY.	1892. No. Miles.	1893. No. Miles.	1894. No. Miles.	1895. No. Miles.	1896. No. Miles.	1897. No. Miles.	1898. No. Miles.	1899. No. Miles.	1900. No. Miles.	1901. No. Miles.	1902. No. Miles.	1903. No. Miles.	1904. No. Miles.	1905. No. Miles.	1906. No. Miles.	1907. No. Miles.	1908. No. Miles.	1909. No. Miles.	1910. No. Miles.	1911. No. Miles.	1912. No. Miles.	1913. No. Miles.	Totals. No. Miles.
Atlantic,					12.	10.	6.84	4.03	.....	7.03	20.10	13.	1.	1.51	.....	6.408	13.94	7.24	8.077	.....	.....	11.016	122.191
Bergen,											1.02	.....	9.375	2.22	.42	1.14	9.595	10.533	.....	.....	3.607	8.776	46.686
Burlington		10.54	20.46	9.75	11.02	10.48	15.03	18.36	8.93	17.36	19.131	27.98	2.48	.....	2.51	3.11	7.55	.132	.....	2.9	8.095	14.244	210.062
Camden,		13.62		8.25	.....	4.125	12.79	2.23	1.	4.48	8.80	9.50	5.985	1.40	.....	20.51	2.33	2.43	5.113	4.987	.....	2.924	110.474
Cape May,										6.00	5.394	6.20	0.15	2.63	.....	4.00	3.399	11.87	3.042	.....	16.809	10.797	70.291
Cumberland,												1.22	.....		.....					.....	19.141	5.595	25.956
Essex,				6.5	6.	4.91	6.67	12.07	9.60	9.36	8.723	5.79	8.545	8.24	.....	7.115	12.623	.....		8.157	1.414	3.355	119.072
Gloucester,				7.75	6.	5.5	7.59	11.40	6.04	17.44	6.875	7.73	.....		.....		5.74	.....		3.594	2.169	3.503	91.331
Hudson,									2.44	.....					2.32	.....					.785	.....	5.545
Hunterdon,															5.55	5.37	6.478	5.867	1.000	9.207	4.394	5.839	43.705
Mercer,			9.46	6.40	10.95	4.75	2.704	10.83	9.16	10.37	15.89	12.3	7.55	16.18	.....	5.85	7.85	2.25	.....	5.308	5.506	.....	143.308
Middlesex,	10.55	3.18	2.36	7.68	8.43	4.75	6.164	13.10	9.01	6.12	14.95	9.52	12.42	8.335	4.981	5.13	17.674	13.613	1.685	5.158	3.470	10.354	178.634
Monmouth,					3.75	5.	5.1	14.46	5.64	6.67	13.25	17.67	5.21	7.47	3.36	2.18	11.54	7.085	8.226	9.607	1.173	2.781	130.172
Morris,						6.13	6.3	10.46	6.53	4.306	10.079	7.13	5.98	3.59	5.94	.69	.....		6.585	2.938	.....	4.524	81.182
Ocean,											3.9	9.97	11.83	7.16	.....	6.91	11.006	2.867	.....	5.379	19.675	22.168	100.865
Passaic,						4.79	5.48	8.67	6.73	3.987	6.57	6.09	1.54	5.38	3.88	4.132	4.99	.....	.789	2.786	.528	2.969	69.311
Salem,					2.67			2.17	2.05	.....	2.51	4.61	7.477	.....	.....		2.906	7.78	3.31	1.779	5.049	14.540	56.851
Somerset,						6.22	7.27	6.6	6.65	7.93	5.88	6.24	10.68	2.685	5.6	7.284	4.37	5.365	1.268	5.155	10.343	5.038	104.578
Sussex, .....										.893	.....	4.03	1.695	.98	.....	.....			3.455	3.278	.....	12.628	26.959
Union,									3.432		2.141	.....	.63	.....	4.01	2.336	4.232	7.757	.....	4.427	3.520	7.916	40.401
Warren, .....								.08	.....	7.43	8.792	3.94	13.09	.....	.....	.....	7.95	1.92	.....	12.265	.....	.....	55.467
Total built each year,	10.55	27.34	32.28	46.33	60.82	66.655	81.938	114.46	77.212	109.376	154.005	152.92	105.637	67.78	38.571	82.165	134.173	86.709	42.550	86.925	105.678	148.967	1,833.041

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