



Sussex County, Frankford-Sandyston Improved Road, Clifford's Hill, Old Road at the Right.

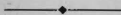
SIXTEENTH ANNUAL REPORT

OF THE

Commissioner of Public Roads

For the Year ending October 31

1909



TRENTON, N. J.:
STATE GAZETTE PUBLISHING CO., PRINTERS.

1910.

OFFICE OF COMMISSIONER OF PUBLIC ROADS,
TRENTON, NEW JERSEY, February 17, 1910.

To His Excellency, John Franklin Fort, Governor, and the Legislature of New Jersey:

I have the honor to submit the Sixteenth Annual Report of the Commissioner of Public Roads for the fiscal year ending October 31, 1909, with such comments and suggestions as existing circumstances seem to require.

FREDERICK GILKYSON,
Commissioner of Public Roads.

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REPORT.

In the last annual report of this department particular reference was made to the future policies to be adopted in the improvement of roads to meet existing conditions of travel. Specifications were prepared which provided for the construction of macadam roads with bituminous binders, and advices were sent to the Boards of Chosen Freeholders and the County Engineers of the various counties that, in extending state aid for road improvements, only such requests as provided for a modern method of construction, excepting a short mileage of lateral roads, would be given favorable consideration.

This announcement was received by the county officials with general favor, and, without exception, the specifications accompanying requests for state aid received during the past year have provided for an improved type of pavement.

The unanimity of favorable consideration for the construction of a bituminous macadam road was the result of the successful experiments made with this type of construction in several counties in our State during the preceding year. Early in the spring of 1909 an inspection of these experimental roads was made by the road committees and county engineers of the several counties, contemplating the construction of stone roads, and it was apparent at that time that a bituminous macadam road would better meet the requirements of travel. While the cost of first construction would be slightly in advance of that of an ordinary macadam road, the reduction in the cost of repairs and maintenance would result in considerable saving. As a consequence, during the past year we have built seventy miles of bituminous macadam roads and have in course of construction thirty-one additional miles. These roads have been the subject of the most favorable comment by many eminent authorities on road construction, and unquestionably New Jersey is as far advanced in modern road building as any State in the Union, and, in addition, has a greater mileage of bituminous roads than any other State.

In another part of this report a detailed statement of the cost of improvement of a number of these roads will be found, but, in order to furnish a comprehensive comparison of the cost of bituminous macadam with the ordinary stone road, we will show a statement of bids received for the improvement of several roads completed or in course of construction:

MIXING METHOD.

<i>Name of Road.</i>	<i>Ordinary Macadam.</i>	<i>Bituminous Macadam.</i>
Walnut and Central avenues, Union county	\$0 75 per sq. yd.	\$1 10 per sq. yd.
Gladstone and Chester, Morris county,	62 " "	95 " "
Brown's Corner, Camden county..	90 " "	1 17 " "

PENETRATION METHOD.

<i>Name of Road.</i>	<i>Ordinary Macadam.</i>	<i>Bituminous Macadam.</i>
Beattystown, Warren county.....	\$0 56 per sq. yd.	\$0 62 per sq. yd.
Plainsboro and Cranbury, Middlesex county	73 " "	90 " "
Jamesburg and Helmetta, Middlesex county	73 " "	85 " "

It will be noted that the average additional cost of this type of construction is $31\frac{1}{3}$ cents per square yard, or \$2,570 per mile, for a fourteen foot road when the material is mechanically mixed before application to the road, and $12\frac{1}{5}$ cents per square yard, or \$1,000 per mile, for a fourteen foot road when the bituminous material is applied by the penetration method. It is estimated that these roads will cost little or nothing for repair and maintenance during their first two years, and after that period the cost of maintenance will not exceed \$250 per mile, while the average yearly cost for the proper maintenance of a macadam road is \$400 per mile; therefore, the economy of the construction of a bituminous road is very apparent.

The largest asset the State of New Jersey has is its great system of good roads. More money has been spent on good roads than on any other improvement, and to conserve this asset the intelligent advancement in the work of road construction along modern lines and the giving of the most careful attention to properly caring for the roads already improved is of vast importance.

Until a few years ago a well constructed macadam road was considered ideal, but the increasing use of our roads by motor vehicles,

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as well as the increased tonnage which wagons and trucks haul over them, make a strong demand for a better and more durable construction. While there is unquestionably much yet to learn before the science of road building can reach the acme of perfection, the State of New Jersey has established a place in the front ranks for improvement and progress in this science.

In a letter received recently from one of the most eminent engineers and authorities on roads in the United States, he says: "You have certainly as many different materials, if not more, to palliate the dust nuisance and advance the science of road construction as any State in the Union, or any country in the world that I know of. In my judgment you are working along the right lines in coating old good roads with dust preventives and constructing new ones with bituminous binders. It is all that any of us know at the present time, and we must of necessity wander in the dark until someone presents a light to go by. Whether bituminous bound macadam is to be the road of the future it will require a prophet to say. If we can only get a bituminous material that will withstand decomposition for five or six years, I believe that macadam roads constructed with it will not only fill all the requirements of modern traffic, but will be cheaper than the old macadam."

To the ability and skill of the engineers throughout the various counties of our State is largely due the degree of efficiency attained by us in modern road construction. In former years the requisite qualifications of a good road builder were ability to make a desirable survey, provide for suitable drainage, have the road properly graded and cross-sectioned and see that a proper road metal was used. The road engineer of to-day, in addition to possessing these qualifications, must scientifically study and learn in every detail the conditions existing on each road under his charge, and must familiarize himself with the character of the travel to which the road is subjected before reaching a conclusion as to the most desirable method of improvement to meet all of these conditions.

In general, a scientific knowledge of road construction, coupled with skillful engineering, is essential in producing proper results.

Assuming that we are working along the right lines in the advancement of new work, the serious problem which confronts us is the reconstruction of roads already improved. The greater mileage of these roads constitutes a part of our trunk line system, and it will necessitate the expenditure of a large amount of money and

require a number of years before the needed repairs to these roads can be properly made. Aside from the question of grading it is almost as difficult a task to rebuild an old road as to construct a new one. In progressing this work we should profit by the mistakes made in years gone by and endeavor to secure the best and most durable construction known. Much consideration has been given this subject and numerous experiments have been conducted to determine the value and advantages of various types of pavements. In a number of instances roads were resurfaced by what is known as the penetration method with the use of asphaltum oil and macadam. The surface of the road was cleaned and scarified, from three to four inches of one and one-half inch stone was spread over it, the roadway then rolled to a proper cross section, after which heavy asphaltum oil, heated to about 200° F., was evenly distributed over the surface in the proportion of about one and three-tenths gallons per square yard. After sufficient time had elapsed to allow the oil to work down into the interstices of the stones, stone screenings were spread over the road and the entire roadway again thoroughly rolled.

This same method of repair has been followed with the substitution of tarvia for asphaltum oil. The average cost of this work is approximately 55 cents per square yard, or \$4,517 per mile, for a fourteen-foot road.

The results of these methods so far seem to be very satisfactory and it is probable that they will be followed extensively.

Numerous experiments have also been made with several patented road building and resurfacing materials which have been brought to the attention of this department. These experiments were conducted in various sections of the State, in order to test their value on different soils and under different climatic conditions. This work has been subject to the constant supervision of the State Engineer and his assistants, as well as the local engineers and supervisors. These experiments were made along practical lines. In no instance was less than the equivalent to a half-mile of a sixteen-foot road selected, it being our judgment that in order to secure the information we desired, namely, the durability of the road under all conditions of travel, the ability of the average contractor to successfully construct this character of pavement and to definitely fix the cost, it seemed to be essential that the work should be done on a comparatively large scale rather than to construct

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short sample pieces of pavement. The results have been extremely gratifying, but it is a question of time to determine their merits and their relative value. The cost of resurfacing a worn out macadam with these materials varies from 70 cents to \$1.10 per square yard, but if the claims made for them are realized the saving in the cost of maintenance will justify the expenditure of the slight additional cost for first repairs.

This type of pavement resembles an asphalt street; in fact, for suburban streets and country roads it is just as desirable. While possessing most of the virtues of an asphalt street it is more resilient and less slippery; consequently, better adapted for horse travel. It is as nearly dustless as a pavement can be made and the surface is not disturbed by the action of the automobile in passing over it.

In compliance with Chapter 236, Laws of 1909, the staff of this department has been increased by the appointment of two assistant supervisors. These assistant supervisors entered upon their duties on July first, and since that time have been constantly engaged in the supervision of repair and maintenance work being done in the several counties of the State with money apportioned from the motor vehicle fund. Acting under their advice and instructions, county road supervisors and overseers have attained a much higher degree of efficiency in road maintenance, and a more uniform method of repairs has been established which, it is hoped, will effect a considerable saving both in labor and road materials. The advisability of the employment of competent engineers to assist and advise county road supervisors has been clearly demonstrated by the results secured.

This department is indebted to the State Geological Survey for the assistance rendered by it in placing at its disposal the services of the State Chemist and the use of the State Laboratory in making chemical tests of the numerous bituminous materials used in construction and repair work. The assistance given by that department has made it possible for us to secure a chemical analysis of all these materials before placing them on the road, thus insuring the use of only such as met the specified requirements, and eliminating those of inferior quality.

To the knowledge and ability of the State Chemist is largely due the high standard of the chemical tests required under our standard specifications for bituminous roads, which specifications have

been closely followed by several other States in the construction of their highways.

Never in the history of this department has the demand for the extension of road improvements been so great. This demand comes not alone from the automobilist or from those who use our roads for pleasure or for business purposes, but from the farmer who is fast realizing the advantages of improved roads, as evidenced by the great number of requests which reach this department from time to time for the improvement of interior roads.

While a number of these requests cannot be favorably acted upon for some time to come, it is the policy of the State Department, in the advancement of its trunk line system, to tap as many of these lateral roads as possible, with a view of extending the greatest benefit to the greatest number of people.

It would be difficult to compile statistics which would show the actual value of an improved road to the agricultural interests in any section of our State, but certainly the increased value of lands within the territory through which the road passes, the reduction in the cost of hauling, and the advantages gained by the ability of the farmer to reach the market at all seasons of the year, and under all weather conditions, make the improvement of roads of inestimable value to these interests.

The great value of good roads to New Jersey is becoming more and more apparent each year. They have brought within our borders a large and desirable citizenship, communities have grown to boroughs and cities, manufacturers have been quick to see the advantages of locating in suburban districts, with good roads over which to haul their products to the railroad stations, industrial centers have grown from what a few years ago were but villages, in almost every locality in our State real estate values have been enhanced, and, as a result, there has been a steady and healthy growth in our ratables.

It is to be regretted that conditions made it necessary for our last Legislature to reduce the appropriation for road improvements from \$300,000 to \$200,000, but we hope that the present Legislature will increase this amount by making a supplemental appropriation of \$100,000, and, at the same time, fix the 1910 appropriation at not less than \$300,000, thus permitting us to continue, without interruption, to advance the good work in which our State has been so long the acknowledged leader.

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In compliance with the act of March 27, 1905, we make a statement of cost of roads, as follows:

COST OF ROADS.

Atlantic County.

	Miles.		
English Creek road.....	6.72		
Cost		\$13,872 30	
State's share.....			\$4,624 10
Chestnut Neck road.....	.52		
Cost		5,143 00	
State's share.....			1,714 33
	7.24	\$19,015 30	\$6,338 43

Bergen County.

	Miles.		
Paterson Plank road.....	2.31		
Cost		\$125,007 67	
State's share.....			\$41,669 22
River road.....	2.437		
Cost		53,849 12	
State's share.....			17,949 71
Yesler Way, Piermont avenue, Fairview, Lawrence and Magnolia avenues, Mag- nolia avenue, Washington avenue and Summit avenue.....	2.656		
Cost		17,391 34	
State's share.....			5,797 11
	7.403	\$196,248 13	\$65,416 04

Burlington County.

	Miles.		
Bridge street, Crosswicks.....	.132		
Cost		\$1,801 45	
State's share.....			\$600 48

Cape May County.

	Miles.		
Schellenger's Landing road.....	2.096		
Cost		\$10,593 21	
State's share.....			\$3,531 07
Goshen road, second section.....	2.603		
Cost		9,559 98	
State's share.....			3,186 66
	<hr/>	<hr/>	<hr/>
	4.699	\$20,153 19	\$6,717 73

Hunterdon County.

	Miles.		
White House and Flemington road, second section.....	5.867		
Cost		\$40,776 56	
State's share.....			\$13,592 19

Mercer County.

	Miles.		
North Crosswicks road.....	.22		
Cost		\$2,222 95	
State's share.....			\$740 98

Middlesex County.

	Miles.		
Cheesequakes Creek road, amount to complete payment on 1907 contract.....			\$5,138 25
Jamesburg and Helmetta road.....	1.32		
Cost		\$10,259 05	
State's share.....			3,419 68
Trenton turnpike.....	2.505		
Cost		24,107 44	
State's share.....			8,035 31
Helmetta and Spotswood road.....	2.703		
Cost		20,997 59	
State's share.....			6,999 20
Plainsboro and Cranbury road.....	2.46		
Cost		21,250 07	
State's share.....			7,083 36
Cranbury and South River turnpike....	2.461		
Cost		5,579 88	
State's share.....			1,859 96
Jefferson avenue, one-half mileage.....	.194		
Cost, one-half.....		2,699 15	
State's share, one-half.....			899 72
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	11.643	\$84,893 18	\$33,435 98

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Monmouth County.

	Miles.		
Allentown and Imlaystown road.....	3.725		
Cost		\$13,731 00	
State's share.....			\$4,577 00

Somerset County.

	Miles.		
Terrill road.....	.118		
Cost		\$940 32	
State's share			\$313 44
Green Brook road.....	1.16		
Cost		11,038 71	
State's share.....			3,679 57
Stoutsburg and Blawenburg road.....	2.054		
Cost		18,752 33	
State's share.....			6,250 78
	3.332	\$30,731 36	\$10,243 79

Union County.

	Miles.		
Jefferson avenue, one-half mileage.....	.193		
Cost, one-half.....		\$2,699 15	
State's share, one-half.....			\$899 72
Terrill road.....	1.89		
Cost		26,044 28	
State's share.....			8,681 43
Edgar road, Lenington street and Milton avenue	3.319		
Cost		41,352 74	
State's share.....			13,784 24
Washington avenue and Edgar road....	1.16		
Cost		13,195 80	
State's share.....			4,398 60
Walnut and Central avenues.....	1.195		
Cost		15,049 30	
State's share.....			5,016 43
	7.757	\$98,341 27	\$32,780 42

Total number of miles.....	52.018		
Total cost allowed.....		\$507,914 39	
Total paid on contracts from 1909 appro- priation			\$174,443 04
Total paid supervisors.....			19,562 21
Total paid out.....			\$194,005 25
Appropriation			300,000 00
Balance due, against which contracts were filed October 29, 1909.....			105,994 75

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The following roads were paid for from the appropriation of 1910, after the filing of the contracts:

Salem County.

	Miles.		
Barnsboro turnpike.....	3.31		
Cost		\$10,973 30	
State's share.....			\$3,657 77

Sussex County.

	Miles.		
Frankford and Sandyston road.....	3.455		
Cost		\$30,620 22	
State's share.....			\$10,206 74
Total number of miles.....	6.765		
Total cost allowed.....		\$41,593 52	
Total paid by State.....			\$13,864 51

The following roads were paid for from the appropriation for the year 1908, but were not completed in time to be listed in the 1908 report:

Bergen County.

	Miles.		
Valley road, Haworth drive and Flatts road	3.13		
Cost		\$13,885 47	
State's share.....			\$4,628 49

Camden County.

	Miles.		
Camden and Blackwood turnpike extension	2.404		
Cost		\$27,868 37	
State's share.....			\$9,289 46
Evesham road.....	2.43		
Cost		21,570 50	
State's share.....			7,190 17
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	4.834	\$49,438 87	\$16,479 63

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Cape May County.

	Miles.		
Tuckahoe road, second section.....	4.264		
Cost		\$22,437 00	
State's share.....			\$7,479 00
Rio Grande road.....	2.907		
Cost		15,668 58	
State's share.....			5,222 86
	7.171	\$38,105 58	\$12,701 86

Mercer County.

	Miles.		
Hopewell and Stoutsburg road.....	2.03		
Cost		\$15,689 40	
State's share			\$5,229 80

Monmouth County.

	Miles.		
Keyport and South Amboy road.....	1.20		
Cost		\$14,586 84	
State's share.....			\$4,862 28
Lakewood and Adelphia road, first section	2.16		
Cost		7,500 00	
State's share.....			2,500 00
	3.36	\$22,086 84	\$7,362 28

Ocean County.

Lakewood and Alligator road.....	2.867		
Cost		\$13,823 89	
State's share.....			\$4,607 96

Salem County.

	Miles.		
Penn's Grove and Dancer's Mill road....	3.02		
Cost		\$25,449 97	
State's share.....			\$8,483 32
Alloway and Aldine road, second section..	4.76		
Cost		\$19,200 00	
State's share.....			6,400 00
	7.78	\$44,649 97	\$14,883 32

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Somerset County.

	Miles.		
Washington Valley road.....	2.033		
Cost		\$22,617 08	
State's share.....			\$7,539 03

Warren County.

	Miles.		
Morris turnpike extension.....	1.17		
Cost		\$9,912 45	
State's share.....			\$3,304 15
New Brunswick turnpike extension.....	.75		
Cost		9,109 37	
State's share.....			3,086 46
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	1.92	\$19,021 82	\$6,340 61
Total number of miles.....	35.125		
Total cost.....		\$239,318 92	
Total paid by State.....			\$79,772 98

The following road was paid for from the appropriation for the year 1907, but its completion has been delayed until this year:

Middlesex County.

	Miles.		
Cheesequakes Creek road.....	1.97		
Cost		\$31,722 64	
State's share.....			\$10,574 21
Amount paid from 1907 appropriation...			5,435 96
Amount paid from 1909 appropriation...			5,138 25

The total length of improved roads added to our mileage during the year 1909 is as follows:

Paid from 1910 appropriation.....	6.765 miles.
Paid from 1909 appropriation.....	52.018 "
Paid from 1908 appropriation.....	35.125 "
Paid from 1907 appropriation.....	1.97 "
Total	<hr/> 95.878 "

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

Atlantic County.

	Miles.	Cost.
Cologne and Port Republic road.....	8.07	\$18,199 10

Camden County.

Haddonfield and Camden turnpike.....	4.132	\$62,455 33
Coffin's Corner and Gibbsboro road.....	2.247	24,061 01
Nicholson road.....	1.237	12,817 78
Brown's Corner road.....	1.629	19,496 44
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	9.245	\$118,830 56

Essex County.

Central and Green Brook avenues.....	2.828	\$28,696 00
Fairview avenue.....	2.344	17,748 45
River road.....	1.223	11,892 50
Mountain avenue.....	.061	561 00
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	6.456	\$58,897 95

Middlesex County.

Perth Amboy and Keasbey road.....	2.363	\$23,962 84
Seventh street, New Market.....	1.685	12,728 88
Main street, Milltown.....	1.303	10,699 60
Deans and Franklin Park road.....	2.747	8,984 00
Somerset street, New Brunswick.....	.386	4,142 50
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	8.484	\$60,517 82

Monmouth County.

Red Bank and Holmdel road, first section,	3.82	\$18,561 66
Farmingdale and Hamilton road, second section	1.90	10,261 00
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	5.72	\$28,822 66

Ocean County.

New Egypt section of Lakewood and New Egypt road.....	3.00	\$16,787 20
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Somerset County.

Warrenville road (second section Washington Valley road).....	.682	\$7,756 45
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Sussex County.

Newton and Stanhope road.....	9.78	\$83,453 16
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Warren County.

Beattystown road.....	8.58	\$63,008 92
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Total number of miles.....	60.017	
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Total cost.....		\$456,273 82
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Total to be paid by State.....		\$152,091 27
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The total amount expended by the State and the number of miles paid for in each county since the passage of the State Aid Law, are as follows:

County.	Miles.	Amount.
Atlantic	103.1	\$104,619 81
Bergen	34.303	118,418 33
Burlington	189.143	298,090 61
Camden	111.384	212,272 87
Cape May	44.328	75,374 54
Cumberland	1.22	14,773 23
Essex	106.672	267,230 98
Gloucester	80.635	89,431 80
Hudson	4.76	40,135 27
Hunterdon	23.265	60,293 51
Mercer	132.494	340,006 58
Middlesex	156.067	310,359 07
Monmouth	108.385	200,242 82
Morris	67.825	138,675 97
Ocean	53.643	65,083 24
Passaic	62.239	122,756 89
Salem	36.223	56,727 29
Somerset	82.784	161,222 10
Sussex	11.053	25,623 32
Union	24.532	68,408 93
Warren	43.202	89,988 74
	1,477.257	\$2,859,735 90

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.	Total No. Miles Built.
Atlantic.....					12	10	6.84	4.03		7.03	20.10	13	1	1.51		6.41	13.94	7.24	103.10
Bergen.....											1.02		9.375	2.22	.42	1.14	9.595	10.533	34.303
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		3.71	3.11	10.67	.132	189.143
Camden.....		13.62		8.25		4.125	12.79	2.23	1	4.48	8.80	9.50	5.985	1.40		23.04	11.33	4.834	111.384
Cape May.....										6	5.394	6.20	2.23	2.63		6.605	3.399	11.870	44.328
Cumberland.....												1.22							1.22
Essex.....				6.50	6	4.91	9.276	12.07	9.60	9.36	8.723	5.79	8.545	8.24		5.035	12.623		106.672
Gloucester.....				7.75	6	5.50	7.59	11.40	4.61	17.44	6.875	7.73					5.74		80.635
Hudson.....									2.44						2.32				4.76
Hunterdon.....															5.55	5.37	6.478	5.867	23.265
Mercer.....			9.46	6.40	10.95	4.75	2.704	10.83	9.16	10.37	15.89	12.30	7.55	16.18		5.85	7.85	2.25	132.494
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	3.23	17.674	13.613	156.067
Monmouth.....					3.75	5	5.10	14.46	5.64	6.67	13.25	17.67	5.21	7.47	3.36	2.18	11.54	7.085	108.385
Morris.....						6.13	6.30	10.46	6.53	4.306	10.079	7.13	5.98	3.59	6.63	.69			67.825
Ocean.....										3.90	9.97	11.83	7.16		6.91	11.006	2.867		53.643
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		62.239
Salem.....				2.67			2.17	2.05		3.25	4.61	7.477					2.906	11.09	36.223
Somerset.....						6.23	7.27	6.60	6.65	7.93	5.88	6.24	10.63	2.685	5.60	7.284	4.37	5.365	82.784
Sussex.....										.893		4.03	1.695	.98				3.455	11.053
Union.....									3.432		2.141		.63		4.01	2.336	4.226	7.757	24.532
Warren.....								.08		7.43	8.792	3.94	13.09				7.95	1.92	43.202
Total built each year..	10.55	27.34	32.28	46.33	60.82	66.665	84.544	114.46	75.782	109.376	154.745	152.92	107.717	67.780	40.461	83.322	146.287	95.878	1477.257

Description of Roads Improved in 1909.

ATLANTIC COUNTY.

English Creek Road, 6.72 Miles Long.

This road begins at the Shore road in Northfield City and extends westerly to the bridge over the mill pond at English Creek. The original heavy, sandy road has been changed to a smooth, firm, hard highway. This improvement is of great benefit to the agricultural and truck farming industries in this section of the county, since it enables them to increase their loads at least one hundred per cent. and substantially shorten the time of haul to their market, Atlantic City.

The width of the gravel bed is twenty feet, and its depth varies from eight inches in the center to four inches at the shoulders.

The maximum grade was reduced from 6 per cent. to 3.94 per cent.

Chestnut Neck Road, .52 Miles Long.

The reconstruction of this road was made necessary because the flood tides had so washed and carried away the original gravel surface that the road was hardly passable at some points. To avoid future trouble from the tides it was deemed best to raise the road bed two and one-half feet and protect the sides with sod banks. This work is now completed and the road once more is in fact, as well as in name, an improved highway. The importance of this road lies in the fact that it is a part of the Ocean Boulevard route, being on the main road from Tuckerton to Atlantic City. It is built of gravel, 27.5 feet wide, 3 to 8 inches thick.

The road was and is practically level.

BERGEN COUNTY.

Paterson Plank Road, 2.31 Miles Long.

This is the meadow portion of the old turnpike between Jersey City and Paterson. In order to maintain the road in the condition required by the old turnpike act, namely, smooth, hard and convenient for travel at all seasons of the year, the turnpike company constructed a road of heavy planks across the marsh known as the Hackensack meadows. This construction served to accommodate the limited traffic of that time, but the wonderful increase of population and the constantly increasing travel taxed the old plank road far beyond its capacity, and many attempts were made to repair the road in such a manner that it would sustain the vehicular traffic. The county finally decided that the work was too great for it to undertake alone. It therefore applied to the State for assistance, which was granted, and the work of improvement was inaugurated and carried to completion along permanent lines; that is, the meadow was filled in to a height of four feet above its surface and the filling continued until the embankment ceased to settle. Upon this embankment a macadam road thirty-four feet wide and eight inches thick was laid, the top coating of stone being cemented with hot asphaltum oil, applied at the rate of one and one-third gallons per square yard. The oil was applied by means of sprinkling wagons. After the application of the oil a light coating of stone screenings was spread over the entire surface and the whole rolled until thoroughly consolidated.

The road was and is practically level.

River Road, 2.437 Miles Long.

This is the famous old road from Fort Lee ferry to the top of the Palisades. The work is of more than ordinary interest because of the many accidents that have occurred to bicyclists and automobilists by reason of the sharp turns and steep grades of the old road. The first and most radical change was making a double road at the upper and steepest part of the road, bridging and fill-

ing up a rocky gully and building parapet walls along the sides, thus converting what was the most dangerous hill in this section into a safe driveway.

This road is built of macadam with tarvia applied by the penetration method on the second course. It is twenty, twenty-two and twenty-six feet wide and seven inches thick.

The maximum grade was reduced from 13.4 per cent to 10 per cent. on the old line and from 17 per cent. to 10.34 per cent. on the loop.

Yesler Way, Piermont Avenue, Fairview, Lawrence and Magnolia Avenues, Magnolia Avenue, Washington Avenue and Summit Avenue, 2.656 Miles Long.

These roads complete and connect the through line leading north and south, east and west to and through the township of Hillsdale. They thus make the roads previously improved of much greater value and really add more to our road system than their length would indicate. They are built of macadam, fourteen feet wide and six inches thick.

The maximum grade was reduced from 12 per cent. to 6.50 per cent.

Valley Road, Haworth Drive and Flatts Road, 3.13 Miles Long.

The first road runs north through Haworth borough from Dumont on the south to Closter on the north. The second is an east and west road connecting two of the oldest roads in Bergen county, namely, the Schralenburg and Flatts. It is therefore of more than local value as it supplies a connection that has long been needed between the north and south roads, which were those first improved. These roads are built of macadam, fourteen feet wide and four inches thick.

The maximum grade was reduced from 8.39 per cent. to 7 per cent.

BURLINGTON COUNTY.

Bridge Street, Crosswicks, .132 Miles Long.

This may more properly be called a bridge approach, as it connects the stone road in Crosswicks with the new bridge over Crosswicks creek, the county line. The old bridge was so low that it was impossible to construct a road with a reasonable grade; consequently, a new bridge was built six feet higher, thus enabling us to reduce the maximum grade from 12.60 per cent. to 7.10 per cent.

This road was originally built sixteen feet wide and eight inches deep. It was afterwards widened an average of two feet on each side, thus making the finished roadway twenty feet wide.

CAMDEN COUNTY.

Camden and Blackwood Turnpike Extension, 2.404 Miles Long.

The macadamizing of the southern section of this old turnpike furnishes an inlet and outlet to and from the city of Camden and the extreme southern river division of the county. The macadam is fourteen feet wide and eight inches deep.

The construction of this road follows the new departure inaugurated last year; namely, the use of asphalt as a binder on the one and one-half inch stone, and the absorption of the surplus oil with stone screenings.

The maximum grade was reduced from 6.70 per cent. to 4 per cent.

Evesham Road, 2.43 Miles Long.

This road forms an east and west connecting link between the White Horse Pike and the Blackwood turnpike. It is one of the spanning cords between the main county roads, which radiate from the city of Camden, and is therefore of great value to all farmers and truck raisers who wish to travel from east to west across the southern part of the county, there being very few hard roads tra-



Cape May County, Goshen Road, Second Section, Before Improvement.



Cape May County, Goshen Road, Second Section, After Improvement.

versing this general direction. It is built of macadam, fourteen feet wide and eight inches thick, with the exception of twelve hundred feet, on which Amiesite was substituted for the second course of stone. Amiesite is a mixture of crushed stone with hot asphaltum oil, the oil being fixed with slaked lime. The operation of mixing is carried on in an asphalt mixer. The distinctive feature of this pavement is that it is applied cold. This piece of pavement has been down over a year and thus far it seems to have improved with age. The road was completed a few weeks too late to be reported last year.

The maximum grade was reduced from 6.40 per cent. to 3.67 per cent.

CAPE MAY COUNTY.

Schellenger's Landing Road, 2.096 Miles Long.

This road begins at the northeast end of the bridge over Cape Island creek, Schellenger's Landing, and extends north and west to the Main Seashore road at Cold Spring. It is constructed of gravel, twenty feet wide, nine inches deep in the center, and four inches in depth on each side. The road is built through a section which is being rapidly developed, and it serves the further purpose of diverting a portion of the traffic of Cape May from the Main Shore road.

The maximum grade was reduced from 3.40 per cent. to 1.10 per cent.

Goshen Road, Second Section, 2.603 Miles Long.

This work begins at the end of the gravel laid last year and extends to and through the village of Goshen to the bridge over Sluice creek, where it connects with the county road to Dennisville. The completion of this work gives the county of Cape May an improved gravel road from Cape May City to Dennisville. Its value to the county is far greater than would first appear, as it not only gives the people of Goshen and vicinity a fine, smooth highway, but also makes the old county road through Dennisville of double value, as it connects it with the other improved highways of the county. The width of the gravel bed is twenty feet and its depth varies from eight inches in the center to four inches at the sides.

The old road was very crooked; consequently, it was necessary to cut off several corners and even to straighten the road in the village of Goshen, but the results have been so satisfactory that not even the property owners who had to give a few feet of land would have the road put back on the old line.

The maximum grade was reduced from 3.40 per cent. to 1.40 per cent.

Tuckahoe Road, Second Section, 4.264 Miles Long.

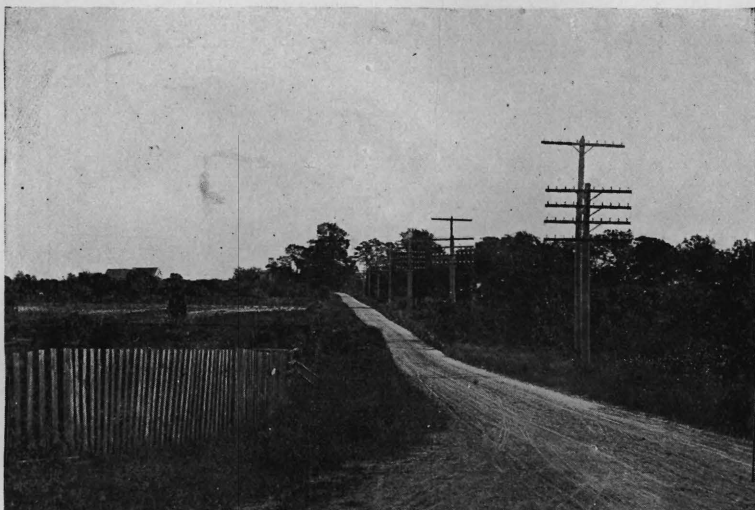
The completion of this road connects Ocean City with Tuckahoe. This last section begins at the bridge over Cedar swamp and extends through Tuckahoe to the drawbridge over the Tuckahoe river. The original road was heavy, sandy, swampy; in fact, a portion of it was merely a wagon track; therefore, the change is most marked, as the present road is firm, smooth, hard and nearly straight. In addition to its local value, it is of great importance to the county, as it forms the main inlet from the north to the rapidly growing seaside resorts of Cape May county. The road is covered with gravel for a width of twenty feet, the depth of this gravel varying from eight inches in the center to four inches at the sides.

To still further improve this highway, the maximum grade was reduced from 3.40 per cent. to 1.40 per cent.

Rio Grande Road, 2.907 Miles Long.

This gravel road begins at the Main Seashore road in Rio Grande and extends westerly to the Bay Shore road near Schellenger's Corner in Green Creek. The gravel was spread for a width of twenty feet and to a depth of nine inches in the center, which was gradually reduced to three inches at the outer edges. The value of this road lies in the fact that it connects some of the best farming country in Cape May county with the shore, thus enabling the farmers and truck raisers to more quickly and cheaply transport their products to the summer markets along the ocean.

Realizing its value would be greatly increased if the hills were leveled and the hollows filled, the road was very thoroughly graded, thereby reducing the maximum grade from 2.90 per cent. to .70 per cent.



Cape May County, Second Section Tuckahoe Road, Before.



Cape May County, Second Section Tuckahoe Road, After.



Hunterdon County, White House-Flemington, Second Section, 1909, Before.
Near Stover's Mill, looking toward Flemington. High water always
overflows this section.



Hunterdon County, White House-Flemington, Second Section, 1909, After.
Near Stover's Mill, looking toward Flemington. Grade raised 2 feet
for a distance of 900 feet along south branch of Raritan River.

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HUNTERDON COUNTY.

White House and Flemington Road, Second Section, 5.867 Miles Long.

This road begins at the end of the macadam laid last year, and extends southerly through Barley Sheaf, thence across the south branch of the Raritan river, through Flemington Junction to Flemington. The completion of this improvement connects Flemington with Somerville and the other county seats lying northeastward. It also forms the connecting link between Eastern New Jersey and the Delaware river; in fact, it completes a cross road from the Hudson to the Delaware. Thus it will be seen that though the road is of great value locally, it also possesses a more general importance as a through line. The road is built of macadam, fourteen feet wide and six inches deep.

Many changes in the location of the old road were made whereby the line was materially straightened and the original grades greatly reduced. The important work of grading was very well and thoroughly done by the county, as will be noted from the fact that the maximum grade was reduced from 14 per cent. to 6 per cent.

MERCER COUNTY.

North Crosswicks Road, .22 Miles Long.

This improvement begins at the Trenton and Crosswicks road and extends to the Crosswicks bridge. It is Mercer county's portion of the approach to the new bridge over Crosswicks creek. The pavement consists of macadam, sixteen feet wide and six inches thick, the second or upper course being cemented with heavy asphaltum oil. The result of this treatment was not very satisfactory at first, but the road has improved and hardened so well under travel that it now has a fine, smooth, elastic surface.

The maximum grade was reduced from 4.60 per cent. to 4 per cent.

Hopewell and Stoutsburg Road, 2.03 Miles Long.

This improvement begins at the end of the old macadam at the westerly line of the borough of Hopewell and extends through Hopewell to the Somerset county line at Stoutsburg. The construction of this road completes the improved highway from Trenton, through Pennington and Hopewell, to the Somerset county line. The width of the macadam pavement is fourteen feet and its depth six inches. The top course was treated with asphaltum oil, but the results were not as satisfactory as those attained on our other work of a similar character because clay was used as a binder; nevertheless, we gained valuable experience and learned what not to do, which is often more important than what to do in new methods of construction.

The maximum grade was reduced from 7.65 per cent. to 5 per cent.

MIDDLESEX COUNTY.

Cheesequakes Creek Road, 1.97 Miles Long.

The macadamizing of this road was practically the most difficult piece of road improvement ever undertaken in Middlesex county. From the beginning of the improvement at Cheesequakes bridge across the meadows to Lawrence Harbor a very soft and unstable bottom was found; in fact, it was several months ere the fill on this section ceased to settle. Beyond the meadow, through the hills of Lawrence Harbor, a very heavy blue clay was encountered. This was so very wet and plastic that it was found impossible to build a stone road over it without first filling in the sub-grade with brickbats. So soft was the bottom that in many places the bricks were laid to a depth of over a foot. Upon this foundation the macadam was laid. Beyond these hills another short stretch of salt meadow was encountered which required a great deal of extra material ere the fill reached a final state of repose. As an illustration of the soft character of the bottom, the trestle of the trolley road which parallels the highway was pushed several feet out of line. The macadam was laid for a width of fourteen feet and to a depth of eight inches. Although a very expensive road, it is worth



Middlesex County, Trenton Turnpike, Before.



Middlesex County, Trenton Turnpike, Asphalt Binder, After.

all that it cost, as it brings the seaside resorts fifteen miles nearer the northern cities and towns of the State as well as New York City.

The maximum grade was reduced from 10.80 per cent. to 4.20 per cent. This probably shows more clearly than anything else how many steep hills were cut down and how many deep gulleys were filled in the improvement of this road.

Jamesburg and Helmetta Road, 1.32 Miles Long.

This work begins at Lake avenue in Jamesburg and extends easterly to the Helmetta road. The width of the macadam is fourteen feet and its depth eight inches. Asphaltum oil was used as a binder on the upper course, with the result that we have a road with a firm, smooth and slightly resilient surface, which is very pleasant for both horsemen and automobilists.

The maximum grade was reduced from 5.60 per cent. to 3.93 per cent.

Trenton Turnpike, 2.505 Miles Long.

This is a continuation of the old air line turnpike between Trenton and New Brunswick. The alignment of this road is everything that could be desired, but that is the only good thing that can be said about it, as the natural road is simply a succession of clay and sand beds, each, if possible, worse than the other. Mercer county commenced the improvement of this road in 1905 and completed it to the Middlesex county line in 1908. Middlesex has taken the work up this year and carried it on to the Monmouth Junction stone road, thereby reducing the distance over good roads between Trenton and New Brunswick more than five miles. The pavement is of macadam, sixteen feet wide, eight inches thick, the second or upper course being treated with asphaltum oil applied hot by means of sprinkling wagons, the process being known as the penetration method. After the application of the oil, stone screenings were spread lightly over the entire surface, making a pavement that is practically waterproof and which further seems to improve rather than deteriorate under travel.

The maximum grade was reduced from 5.10 per cent. to 3.40 per cent.

Helmetta and Spotswood Road, 2.703 Miles Long.

The laying of this pavement extends the stone road from Jamesburg to the old macadam road at Spotswood, thus completing the macadam highway from Jamesburg to New Brunswick. The pavement is of macadam, fourteen feet wide, eight inches thick, the upper course, as in the adjoining road, being treated with heavy asphaltum oil, heated to over two hundred degrees F. The result is far more satisfactory than any obtained with the old style macadam, the surface being smooth and compact and showing no tendency whatever thus far to disintegrate.

There were several short, sharp hills along the line of this road which it was found necessary to cut down. The work was so effectually done that the maximum grade was reduced from 5.30 per cent. to 1.125 per cent.

Plainsboro and Cranbury Road, 2.46 Miles Long.

This is the last section of the road between Plainsboro and Cranbury to be improved, and is greatly appreciated by the people of Cranbury as well as the farmers living along its line, as it gives them an outlet over a good, smooth, hard road to the main line of the Pennsylvania railroad at Plainsboro, whence most of their produce is shipped. This last section was improved with macadam, fourteen feet wide and six inches thick, to the upper course of which asphaltum oil was applied as a binder, with very satisfactory results.

The road was further improved by grading so that the maximum grade was reduced from 3.10 per cent. to 1.70 per cent.

Cranbury and South River Turnpike, 2.461 Miles Long.

This improvement begins at the Jamesburg and Dayton stone road and extends to the intersection of the Helmetta and Dunham's Corner road. As the road is built through a good gravel country, macadam was not used for its improvement. The surface was covered with gravel for a width of twenty feet and to a



Middlesex County, Helmetta and Spotswood Road, Before Improvement.



Middlesex County, Helmetta and Spotswood Road, After Improvement.

depth of nine inches in the center, which was gradually reduced to three inches on the sides. The work was well done and the material was of such good quality that we have as a result one of the finest gravel roads built this year.

Another marked feature in the improvement of this old turnpike was the reduction of the maximum grade from 7.30 per cent. to 2.10 per cent.

Jefferson Avenue, .387 Miles Long.

This road lies in Union and Middlesex counties. The description of same will be found under Union county.

MONMOUTH COUNTY.

Allentown and Imlaystown Road, 3.725 Miles Long.

This road begins at Allentown and runs in almost an air line to Buck Hole brook in Imlaystown. It is a road of much value locally to the many farmers living along it, as it enables them to reach their market and banking town of Allentown, from which place they can travel over improved roads to Trenton. The road is covered with gravel, eighteen feet wide, which varies in depth from nine inches in the center to three inches on the sides.

The maximum grade was reduced from 2.08 per cent. to 1.46 per cent.

Keyport and South Amboy Road, 1.20 Miles Long.

This improvement begins at Whale Creek Hill, just south of Middlesex county line, and is a continuation of the Cheesequakes Creek road; in fact, it is the closing link of the Shore road from the Amboys to the seashore. It is built of macadam, sixteen feet wide and eight inches thick. This road was also built over a very soft and treacherous bottom; in fact, this and the Cheesequakes road may be said to be entirely new roads as far as the public is concerned.

The maximum grade on this road was reduced from 5.26 per cent. to 3.50 per cent.

Lakewood and Adelpia Road, First Section, 2.16 Miles Long.

This road begins at the county line road, the northerly boundary of Lakewood, and extends northerly to Southard. It is the first portion of the cut-off between Freehold and Lakewood. Its completion will bring this famous winter resort six miles nearer the northern portion of the State than by the present route via Farmingdale. The road is coated with gravel, fourteen feet wide and eight inches thick.

The maximum grade was reduced from 3 per cent. to 2.10 per cent.

OCEAN COUNTY.

Lakewood and Alligator Road, 2.867 Miles Long.

This road begins at the arched bridge in Lakewood and extends westerly to the Lakehurst and Lakewood gravel road at the Alligator. It forms part of two important lines leading out of Lakewood, the first toward the south and already improved as far as Lakehurst, the second, that leading westerly toward New Egypt, Ocean county's best farming center. The construction is of gravel, twenty-four feet wide, except the portion in Lakewood proper, which is thirty-six feet in width, the depth in both cases varying from nine inches in the center to three inches on the sides.

The maximum grade was very greatly reduced, not only by cutting, but also by changing and straightening the old road, the maximum before improvement being 6.20 per cent. and after, 2.50 per cent.

SALEM COUNTY.

Barnsboro Turnpike, 3.31 Miles Long.

The improvement of this old turnpike commences at Main street in the borough of Elmer and extends northerly to the Gloucester county line. It furnishes an outlet for the people of Elmer and the numerous farmers living along it to the railroad and markets of Gloucester county. The road was graded to a width of

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thirty feet and was covered with gravel for a width of twenty feet, the depth of which varies from eight inches in the center to six inches at the sides.

Being an old turnpike, the change in grade was not as great as that of some of our other roads, the maximum grade before being 2.98 per cent. and after, 1.165 per cent.

Penn's Grove and Dancer's Mill Road, 3.02 Miles Long.

The improvement of this road was commenced at the westerly curb line of Oak street, Penn's Grove, and carried easterly to the bridge over Game creek. Its chief present value is that it forms a good, hard road at all seasons of the year for the farmers who live along its line, Penn's Grove being the shipping port for all the farm produce raised in this section. The pavement is of macadam, sixteen feet wide in Penn's Grove, and fourteen feet wide in the outlying section, and its depth six inches. This road was completed the latter part of December, 1908, too late to be reported last year.

The maximum grade was reduced from 4.80 per cent. to 1.30 per cent.

Alloway and Aldine Road, Second Section, 4.76 Miles Long.

The completion of this work from Hitchner's mill race, in Remsterville, to the Upper Pittsgrove township line connects Salem with Elmer, the most important town in the eastern part of Salem county. The value of this road to the county is far greater than any other that has been constructed in recent years, because the railroad facilities between the two places are so limited. The road is constructed of gravel, twenty feet wide, and varies in depth from nine inches in the center to three inches on the sides.

The changes along the line of this road are most marked, several sharp angles having been taken out, a number of hills cut down and hollows filled up, whereby the maximum grade was reduced from 9 per cent. to 2.60 per cent.

SOMERSET COUNTY.

Terrill Road, .118 Miles Long.

The value of this improvement lies in the fact that it connects the improved roads of Union county with those of Somerset, and also furnishes a direct route over improved roads from Plainfield to the College of St. Mary on the Mount. The width of the pavement is fourteen feet and its depth ten inches.

The grade was unchanged.

Green Brook Road, 1.16 Miles Long.

This road begins at Gavin avenue in the borough of North Plainfield and extends westerly to Rock avenue, the borough line. The improvement of this road is of great value to the western end of the borough of North Plainfield as the old road was very deep and sandy. The present macadam surface, fourteen feet in width and eight inches thick, to which was applied 1.3 gallons of heavy asphaltum oil, has made a most marked improvement in this road, and, instead of being avoided by vehicles of all kinds, it is now sought by them.

The maximum grade was decreased from 3.50 per cent. to 2.64 per cent., and, at the same time, the line of the road was very decidedly straightened.

Stoutsburg and Blawenburg Road, 2.054 Miles Long.

This work begins at the end of the present macadam in Stoutsburg and carries it forward through Blawenburg to the easterly line of the schoolhouse property. It is a portion of the through line across the State from Trenton to Somerville and connects with the improved road built some years ago through Skillman. The graded width of the road is thirty-three feet and the width of the pavement is fourteen feet and its depth eight inches. This road was also treated with asphaltum oil and is at present in a very



Somerset County, Green Brook Road, Before.



Somerset County, Green Brook Road, After.



Somerset County, Washington Valley Road, Before Improvement, looking eastward, near residence of Fred. Meyers. A fill of 12 feet was made over the bridge shown in the hollow. Also a cut of 8 feet marked *.

The bridge was also lengthened and road straightened at this point, as you will observe by the accompanying picture.



Somerset County, Washington Valley Road, After Improvement, looking eastward, near residence of Fred. Meyers.

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excellent condition. As the soil was very heavy and wet, a great deal of underdraining was necessary.

In the further prosecution of the improvement the maximum grade was reduced from 4.50 per cent. to 2.28 per cent.

Washington Valley Road, 2.033 Miles Long.

This work of reconstruction begins at the bridge over Stony brook in Watchung and extends westerly through Washington Valley toward Warrentonville. The original road was not only rough and hilly, but also very crooked. It was therefore necessary to do much more grading than would have been required on an ordinary public road. The results attained, however, fully justified the expenditure, as the property values along the entire line of improvement have been greatly enhanced and this section will soon be dotted with summer residences. The total width of the improved road is forty feet, fourteen feet in the center being covered with a macadam pavement eight inches thick. As this road was commenced in 1908, no bituminous binder was used upon it.

No more striking evidence of the marked changes made on this road can be cited than that the maximum grade was reduced from 11 per cent. to 3.80 per cent.

SUSSEX COUNTY.

Frankford and Sandyston Road, 3.455 Miles Long.

This is a continuation of the improvement of the stone road through Culver's gap in the Blue mountains to the borough line of Branchville. It is another link in the line of improved roads across the State from the Hudson to the Delaware, and opens up to the tourist and summer visitor the most picturesque section of New Jersey. The succession of mountains and lakes in northern New Jersey are a constant source of surprise and pleasure to the residents of the central and southern sections of our State, and all that they require is that accessibility which good roads afford. Work on this road was commenced in 1908, and it is therefore of plain macadam made from the native rock along the road. The width of this macadam is fourteen feet and its depth eight inches.

Owing to the very mountainous character of the country, it was found necessary to change the alignment of the road in order to avoid hills and gulleys. The result of this work, together with the grading, is that the maximum grade is reduced from 12 per cent. to 4.50 per cent.

UNION COUNTY.

Jefferson Avenue, .387 Miles Long.

This road lies in Union and Middlesex counties. It is also within the borough limits of Dunellen and the city limits of Plainfield. Having so many owners nothing whatever was done toward improving it, each party waiting for the other to do something; consequently, the road was in probably worse condition than any other in that vicinity. It begins at West Front street and extends to the bridge over Green brook. The macadam is sixteen feet wide and seven inches thick, the upper three inches being composed of Amiesite. This latter material is a mechanical mixture of hot asphaltum fluxed with a lighter oil, the oil being fixed by the addition of slaked lime. The contrast between the former and present condition of the surface of this road is probably more striking than that of any other improved this year.

The maximum grade was reduced from 1.10 per cent. to .58 per cent.

Terrill Road, 1.89 Miles Long.

This, one of the oldest roads in northern New Jersey, forms the boundary line between the city of Plainfield, township of Fanwood and borough of Fanwood. The present improvement begins at South avenue, where last year's work ended, and extends to the old Raritan road. The line of the road on the ground had swerved to the right and to the left to avoid hills and swamps, and sometimes for no apparent reason whatever. It therefore was necessary for the township authorities in whose territory these crooks existed to practically relay the road. The result is that we have practically a straight line throughout the entire length of the improvement. The width of the macadam is sixteen feet and its depth six inches,



Union and Middlesex Counties, Jefferson Avenue, looking south, Before.



Union and Middlesex Counties, Jefferson Avenue, looking north, After.



Union County, Washington Avenue and Edgar Road, Before.



Union County, Washington Avenue and Edgar Road, After.

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the upper three inches of which consists of Amiesite. This mechanical mixture of stone, fluxed asphalt and slaked lime produces the most satisfactory pavement containing asphalt that can be laid cold.

The maximum grade was reduced from 4.90 per cent. to 3.47 per cent.

*Edgar Road, Lenington Street and Milton Avenue, 3.319
Miles Long.*

This work of improvement commences at Main street in the city of Rahway and extends easterly to a point five hundred feet southwesterly from the Baltimore and New York railroad in Linden township. The object of this road is to give the people of Rahway and Linden township living south of the Pennsylvania railroad an improved highway between the cities of Elizabeth and Rahway, and also give them access to the large Linden cemetery. The width of the macadam is sixteen feet and its thickness eight inches, the upper course of which is cemented with heavy asphaltum oil, applied at the rate of 1.3 gallons per square yard. This is the reimprovement of the old Edgar turnpike built many years ago.

The maximum grade was reduced from 4 per cent. to 2.40 per cent.

Washington Avenue and Edgar Road, 1.16 Miles Long.

This work begins at Grove street in the city of Elizabeth and extends to a point eight hundred feet northeast of the Baltimore and New York railroad. The work was stopped at this point because it is hoped that the Board of Chosen Freeholders will be able to arrive at an amicable agreement with the railroad officials, whereby the grade crossing at this point may be abolished. The necessity for the abolition of this grade crossing is becoming greater every day as the old cemeteries in the city of Elizabeth are practically full. It is therefore necessary that the new cemetery at Linden should be made as accessible as possible; in fact, it might be said that this road was built for that express purpose.

The maximum grade of the portion improved was reduced from 2.20 per cent. to 1.70 per cent.

Walnut and Central Avenues, 1.195 Miles Long.

This improvement connects the work done in Cranford in 1904 with the old Union county work laid in 1889. It is therefore most aptly termed a connecting link, furnishing the inhabitants of Rahway an improved road to Cranford. The width of the macadam is sixteen feet and its depth eight inches, the upper three of which is composed of Amiesite. This work was very well and carefully done and was finished in such a manner as to arouse much favorable comment.

The maximum grade was reduced from 3 per cent. to 2.50 per cent.

WARREN COUNTY.

Morris Turnpike Extension, 1.17 Miles Long.

This improvement connects the macadam work on the old Morris turnpike with the paved streets of Phillipsburg. It begins at the Lopatcong township line and ends at Fillmore street. The width of the macadam is fourteen feet in the outlying district and sixteen feet in the city. Its depth throughout is six inches. This work was completed in December, 1908, too late to be reported last year.

The maximum grade was reduced from 8.92 per cent. to 5.10 per cent.

New Brunswick Turnpike Extension, .75 Miles Long.

This is really the extension of South Main street to the macadam road laid in Pohatcong township in 1904. It is also the Phillipsburg end of the old Easton and New Brunswick turnpike. Owing to the encroachments by the railroads, it required some time and considerable effort to secure the requisite width for the improvement of this old road. This work has now been accomplished and the city of Phillipsburg has an improved approach from the east.

Much grading was required, as is evinced by the fact that the maximum grade was reduced from 8 per cent. to 3.70 per cent.

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Cost of Repairs.

In compliance with the act of April 12, 1906, amended April 21, 1909, moneys from the motor vehicle fund have accumulated from July, 1907, to December 31, 1909, and have been sent during the year 1909 to the various local authorities for repairs on the following roads:

Roads repaired with bituminous binders—

<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Bridgeboro and Burlington.....	Burlington	\$20,000 00
Bloomfield avenue	Essex	8,000 00
Cranbury and Dayton	Middlesex	1,000 00
Chambers street (on account).....	Mercer	1,967 46
Greenwood avenue	Mercer	9,995 70
Hudson terrace, Englewood Cliffs.....	Bergen	8,396 80
Lexington avenue, Passaic.....	Passaic	1,100 00
Main street and Hudson terrace, Fort Lee.....	Bergen	7,884 80
Moorestown and Camden turnpike.....	Burlington	11,000 00
Madison avenue, Morris township.....	Morris	7,500 00
Madison avenue, Morristown.....	Morris	6,000 00
Mount Kimble avenue, Morris and Passaic twps...	Morris	9,600 00
Market street, Paterson.....	Passaic	4,800 00
Main street, Paterson.....	Passaic	3,500 00
Paramus road, Midland township.....	Bergen	12,059 52
Palisades avenue, Engle street and Grand avenue, Englewood	Bergen	1,000 00
Palmyra and Riverton.....	Burlington	5,000 00
River drive	Passaic	7,200 00
Springfield avenue	Essex	5,000 00
South Main street, Asbury Park.....	Monmouth	9,457 84
South street, Morristown.....	Morris	4,900 00
Salem City	Salem	1,000 00
Seven Bridge and Morris avenue.....	Union	5,000 00
Terrace avenue, Hasbrouck Heights.....	Bergen	4,732 80
White Horse turnpike.....	Camden	25,000 00
Washington avenue	Essex	5,000 00
Westville and Glassboro	Gloucester	6,600 00

Total paid for roads repaired with bituminous binders.....\$192,694 92

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Roads repaired with macadam, gravel or shell—

<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Absecon and Chestnut Neck.....	Atlantic	\$3,000 00
Asbury avenue, Ocean City.....	Cape May.....	1,000 00
Approach Amboy bridge to Morgan station.....	Middlesex	1,500 00
Alloway	Salem	100 00
Allamuchy	Warren	950 00
Bridgeton and Deerfield.....	Cumberland ...	200 00
Bass River.....	Burlington ...	4,000 00
Bound Brook and Dunellen.....	Middlesex	800 00
Black Oak Ridge.....	Passaic	1,900 00
Bernardsville	Somerset	700 00
Blairstown	Warren	450 00
Brunswick turnpike.	Mercer	532 96
Clayton and Williamstown	Gloucester	300 00
Corlies avenue	Monmouth	3,500 00
Cape May Court House and Cape May.....	Cape May.....	4,000 00
Cresskill county road.....	Bergen	500 00
Cedarville and Newport.....	Cumberland ...	200 00
Demarest county road.....	Bergen	500 00
Dunellen and New Market.....	Middlesex	1,200 00
Danville	Warren	875 00
Edinburg, Windsor and Hightstown.....	Mercer	991 41
Edinburg, Dutch Neck and Princeton.....	Mercer	686 85
Eatontown and Long Branch.....	Monmouth	4,000 00
Elmer and Alloway.....	Salem	600 00
Engle street and county road, Tenafly.....	Bergen	1,000 00
Flemington and Lambertville.....	Hunterdon	4,000 00
Freehold and Colt's Neck.....	Monmouth	500 00
Freehold, cut-off to Seashore road	Monmouth	500 00
Farmingdale and Lakewood.....	Monmouth	6,500 00
Freehold and Manalapan.....	Monmouth	4,500 00
Franklin Park and Kingston.....	Somerset	800 00
Franklin avenue, Closter.....	Bergen	500 00
Flatts, Delford	Bergen	200 00
Glassboro and Malaga.....	Gloucester	1,500 00
Glassboro and Hardingville.....	Gloucester	500 00
Hurffville and Cross Keys.....	Gloucester	500 00
Highland	Monmouth	1,000 00
Harlingen and Belle Mead.....	Somerset	1,800 00
Hamilton avenue and Dogtown.....	Mercer	391 75
Hardyston township	Sussex	1,000 00
Keyport and South Amboy.....	Monmouth	1,000 00
Lawrenceville and Princeton.....	Mercer	880 49
Livingston avenue	Middlesex	1,000 00
Lakewood and Point Pleasant.....	Ocean	17,527 00
Little Falls turnpike, Little Falls township.....	Passaic	2,500 00
Lower Alloways (Hancock's Bridge).....	Salem	1,000 00
Mauricetown	Cumberland ...	1,200 00
Mercerville and Edinburg.....	Mercer	997 48

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<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Meadow boulevard	Atlantic	\$12,000 00
Mullica Hill and Harrisonville.....	Gloucester	1,000 00
Mercer county line to Union county line via New		
Brunswick and Metuchen.....	Middlesex	14,000 00
Metuchen and Perth Amboy.....	Middlesex	2,000 00
Mannington	Salem	1,000 00
Mountain avenue	Somerset	250 00
Mine Brook	Somerset	1,500 00
Millstone and New Brunswick.....	Somerset	1,400 00
Mountain avenue, Scotch Plains.....	Union	1,000 00
Morris turnpike, Lopatcong township.....	Warren	875 00
Morris turnpike, Franklin township.....	Warren	950 00
Morris turnpike, Washington township.....	Warren	750 00
Millville and Vineland.....	Cumberland ...	200 00
Monmouth Junction and Kingston.....	Middlesex	1,000 00
New Brunswick, Old Bridge and Spotswood.....	Middlesex	2,000 00
New Brunswick and Franklin Park.....	Middlesex	500 00
Newark and Pompton turnpike.....	Passaic	5,000 00
North Branch	Somerset	1,100 00
North avenue, Garwood and Westfield.....	Union	1,500 00
New Brunswick turnpike, Pohatcong township....	Warren	675 00
Old York	Mercer	227 75
Pompton turnpike	Essex	1,000 00
Paulsboro and Crown Point.....	Gloucester	600 00
Paterson and Hamburg turnpike.....	Passaic	5,000 00
Pedricktown	Salem	200 00
Pilesgrove (Mullica Hill and Woodstown).....	Salem	500 00
Pluckamin	Somerset	2,000 00
Peapack	Somerset	1,100 00
Pennington and Hopewell.....	Mercer	440 75
Port Norris and Mauricetown.....	Cumberland ...	200 00
River	Mercer	944 47
Rocky Hill	Somerset	1,400 00
Roxbury	Warren	950 00
Schraalenburgh, Dumont	Bergen	500 00
Schraalenburgh, Bergen Fields	Bergen	1,000 00
South River and Sayreville.....	Middlesex	2,000 00
Salem and Pennsville.....	Salem	600 00
South Somerville and Wood's Tavern.....	Somerset	1,500 00
Stanhope	Sussex	1,000 00
Sussex	Sussex	1,000 00
South Orange avenue.....	Essex	3,000 00
St. George's avenue, Linden township.....	Union	1,500 00
Straw Church	Warren	675 00
Stewartsville	Warren	850 00
Scotch road and branches.....	Mercer	281 41
South avenue, Fanwood township.....	Union	1,000 00
Tuttle's Corner	Sussex	1,000 00
Trenton and Pennington.....	Mercer	424 25
Trenton and Lawrenceville.....	Mercer	668 73
Trenton and Allentown turnpike.....	Mercer	273 55

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<i>Name of Road.</i>	<i>County.</i>	<i>Amount.</i>
Upper River	Mercer	\$328 70
Union avenue	Somerset	450 00
Woodbury and Knight's Run.....	Gloucester	1,000 00
White Horse and Yardville.....	Mercer	968 65
Woodbridge and Perth Amboy.....	Middlesex	2,000 00
Yardville and Crosswicks.....	Mercer	997 64

Total paid for roads repaired with macadam, gravel or shell....\$170,063 84

Total paid for roads repaired with bituminous binders.....\$192,694 92

Total paid for roads repaired with macadam, gravel or shell..... 170,063 84

Cautionary signs 69 03

Total amount paid from motor vehicle fund for road repairs
during 1909\$362,827 79

Total amount paid from motor vehicle fund for road repairs dur-
ing 1909 \$362,827 79

Total amount paid from county funds for road repairs during 1909, 676,994 92

Total amount paid for road repairs during 1909.....\$1,039,822 71

The following amounts have been appropriated for repairs from
the county funds during the year 1909:

<i>County.</i>	<i>Amount.</i>
Atlantic	\$22,867 43
Bergen	98,052 25
Burlington	33,346 94
Camden	20,000 00
Cape May	6,500 00
Cumberland	1,113 37
Essex	70,000 00
Gloucester	10,000 00
Hudson	135,500 00
Hunterdon	850 94
Mercer	26,500 00
Middlesex	31,903 13
Monmouth	72,000 00
Morris	37,000 00
Ocean	4,386 73
Passaic	64,681 79
Salem	1,751 89
Somerset	11,464 44
Sussex	1,500 00
Union	23,570 54
Warren	4,005 47

\$676,994 92

Resurfacing Worn Out Macadam.

BY E. M. VAIL, ASSISTANT STATE SUPERVISOR PUBLIC ROADS.

Special attention has been given during the past year to the repair of our old macadam roads. The method giving the best general satisfaction is to sweep the loose dirt from the stone bed to the shoulders, scarify or break up the surface of the upper course of stone, then spread and shape the old material to form a proper crown of the same curvature as the surface of the finished road, using a little new material where necessary.

Old roads are usually worn more in the center than at the edges of the stone bed; hence when the loosened stone is raked toward the center to form the crown, a shoulder of dirt is formed for the new stone which is to be added later. The shoulders are then cleaned and shaped for their entire width, the gutters properly attended to and the shrubbery and overhanging limbs of trees trimmed to at least twelve feet above the road at all points. It is especially necessary that this work be done in advance of the spreading of the new stone, so that the new work may be kept clear of dust and dirt of all kinds.

The roadway, having been thus prepared, is ready to receive whatever kind of resurfacing the specifications call for. One method is to spread a cushion of clean, sharp sand, followed by new, clean one and one-half-inch stone, cubical wooden blocks being used to insure a uniform depth. After rolling once, hot asphaltum binder is applied, followed by a light coat of clean three-quarter-inch stone, enough to keep the roller from picking up the stone. This first application of binder and three-quarter-inch stone is sometimes followed by another applied in the same manner.

In cases where the old material is properly rolled and shaped, as explained above, no depressions or irregularities appear in the new work, but the one and one-half-inch stone shows on the surface

with just enough three-quarter-inch stone and asphaltum oil to fill the voids and bind the whole together.

It is frequently necessary to take up an excess of binder appearing on the surface by spreading a light layer of three-quarter-inch stone and screenings, carefully broadcasting it with shovels where needed. If sand is used to fill a part of the voids between the stones, it is very important that it be shaken down out of sight before the asphaltum binder is applied or the binder will not adhere to the stones.

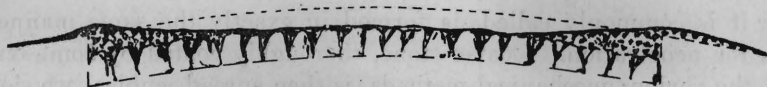
Some local engineers and supervisors do not yet realize the importance of having each course of stone uniform in size and the same depth in all parts, and therefore allow the contractor to dump the new stone on the hard, dusty surface of the old road where it will not properly bind.

If the loose dirt has not been swept away or scarified and rattled down among the old stone by rolling, it mingles with the new stone and prevents the asphaltum binder from adhering.

The additional stone necessary to build up a crown on an old flat surface costs more than scarifying and reshaping, because the depth of the new stone varies, perhaps, from one to six inches.

The amount of asphaltum binder required varies according to the depth of loose stone to be treated. When too little is applied, dust will soon work in and render it impossible to properly bind the stone even with an additional amount of binder. An excess of binder will result in soft, spongy spots, from which melted asphalt will ooze on a hot day. It will therefore be readily seen that in a section varying from one to six inches in depth it is almost impossible to determine the amount of binder required. In some cases only enough extra dirt is borrowed from the side of the road to form a narrow shoulder for the new stone instead of reshaping the entire shoulder to the gutter line as suggested. This causes an abrupt drop from the edge of the stone which is liable to upset a vehicle.

The process just described is what is known as the penetration method, and gives very good results when exactly the proper material is obtained, heated and carefully applied in the right quantity. On account of the extreme care necessary from start to finish with the penetration method, it has been thought advisable on some of the more important roads to adopt the mixing method, even after considering the additional first cost.



BEFORE REPAIR

Worn out Macadam on Telford base



WRONG METHOD

New stone piled on surface of old road



RIGHT METHOD

**Road scarified and reshaped before the new
stone was applied**

For the mixing method the foundation and shoulders, or base as it is commonly called, is formed in exactly the same manner as for penetration. Coarse stone, thoroughly coated by some one of the various mechanical methods, is then spread, cubical wooden blocks being used to aid in getting a uniform thickness before rolling, for when the roller has passed once over it, the material is set firmly together and it is difficult to fill up any slight depressions or roll down bumps.

This first course is followed by a thin second course of small stone coated in the same way, which is intended to fill up any spaces between the coarse stone and make a water-tight road. In some processes even a third coat, consisting of treated stone dust, is lightly scattered or broomed on to make a finished surface.

Asphaltum is unquestionably the best known binder, but the question of long service is what will eventually decide which is the best and cheapest manner of applying it to sustain a combined horse-drawn and motor-driven vehicle traffic. The present indications are very much in favor of the mixing method.

Since most of the work to be performed, with money apportioned to the various counties from the motor vehicle fund, will be by contract, it will be necessary for contractors who would successfully compete for this work, and, in fact, all State aid work, to provide themselves not only with standard ten-ton rollers, the regular wide-tired wagons and small tools, but a scarifier and a suitable outfit for asphaltum work. One roller and one scarifier have occasionally been made to do the work for two or three small jobs located in the same district. While we should encourage small contractors in every possible way, it is not fair to county or State to put up with the annoyances and delays consequent upon such work, and even a contractor is now expected to set apart a full set of tools for each particular job contracted for.

I was recently on a piece of work a fraction over five miles in length and found five steam rollers at work, quite a contrast to the present system, or lack of system, which some of our county officials have been in the habit of employing in repairing roads, namely, that of dumping stone loosely on the road and expecting the travel to roll it into place.

Heavy Asphaltum Oil as a Dust Preventive.

BY EDWARD E. REED, ASSISTANT STATE SUPERVISOR PUBLIC ROADS.

In the construction of practically all stone roads built under State aid during the year 1909, the mixing and penetration methods were successfully used. As a result of our experience, these improved methods of construction will be used in all proposed new work.

In the repairing of our old macadam roads, however, no such uniformity of method has been maintained. Roads have been repaired by the application of asphaltum oils and tar preparations to the second course of stone, while in some places just ordinary macadam, bound with gravel or stone screenings, has been used. By the use of asphaltum oils and tar preparations in the second course of stone, we obtain, in addition to greater adhesiveness and resiliency, less dust than when plain macadam is used, although neither is absolutely dustless. This kind of repairing gives some relief from the dust nuisance, but there are many miles of macadam roads, built in recent years, without bituminous binders, the surface of which, excepting the dust, is in very good condition. These roads do not require an additional course of stone, but do need some treatment to allay the dust.

The dust problem is a serious one. The farmer and others having pretty country homes, as well as those who still take pleasure, if they can find it, in driving their horses over the country roads, want relief from this condition. Some counties have gone to considerable expense to alleviate the dust nuisance and have applied various dust preventives, with varying degrees of success, but there are still some sections where nothing has been done in this respect. These conditions should not be ignored, and the sooner they are recognized and mastered the better and more cheaply will our roads

be maintained, to say nothing of the benefit bestowed upon those using them.

The successful use of the various dust preventives depends not only upon the quality of material, but also upon the men in charge of the work. A man anxious to see the dust preventive a success may give an inferior material a better trial, hence a better chance for success, than another man, averse to its use, would give a far better material and thus perhaps cause its rejection.

Before applying an asphaltum oil as a dust preventive the road should be inspected, and if any ruts or hollows appear they should be picked or loosened, filled with one and one-half inch stone and screenings, and well tamped or rolled until thoroughly compacted and to a smooth and uniform cross section. It is absolutely necessary that these hollows be filled with stone before the application of the oil, since, if this is not done, in wet weather they will be filled with a very objectionable emulsion that will be splashed on vehicles, pedestrians and fences. The road should then be swept free of dust and the oil applied hot by means of a tank wagon. If much dust be left on the road, in wet weather a slippery mud will be formed that will prove very disagreeable and perhaps dangerous. An oil containing forty per cent. asphaltum will give satisfaction during an entire season, while two or three applications of lighter oils are necessary. If the oil be applied to one-half the width of the road at a time, it will allow the traffic the use of the dry part until the oil penetrates to a slight degree the surface of the road. There is more or less objection to this method, particularly in residential sections where the heavy asphaltum oil is easily tracked in houses, notwithstanding the trouble taken to prevent it. With slightly additional cost the material could be applied the full width of the road, clean three-quarter-inch stone spread in a thin layer, and the whole thoroughly rolled. This method is advised near cities and boroughs where traffic is greater than in more suburban districts.

The result will be a road with a smooth, resilient surface and practically dustless, that can be used with pleasure by all classes of travel and will not be blown to the fields and homes of the farmers.

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Relocation of Roads in Hilly Country.

BY A. H. KONKLE, COUNTY ENGINEER, SUSSEX COUNTY, N. J.

I have been asked to prepare an article on relocation of public roads in hilly country. I do not know why I should have been selected for this duty, other than that I happen to reside among the hills of old Sussex, the most mountainous district in the State.

The causes leading up to and which, at the present day, demand relocation of improved roads, date back to the very early history of our country, when our forefathers began to settle here and there in what was then an unbroken wilderness, and when it became of the utmost importance to have communication between the different settlements for their mutual protection against the invasion of the Red Man of the forest. Then it was that mere foot paths were blazed through the forest and opened up from one settlement to another, regardless of any feasible route. These soon became bridle paths, later to become cart paths and highways. Many of such roads that to-day are our public highways were never surveyed or legally laid out and recorded upon our county records. As time passed and it became the custom to have the roads legally laid out, but little more attention was paid to the location in order to eliminate grades. When John Jones believed it would be to his interest to have a public highway laid out, passing his door and extending through his brother Hiram's place, they made application to the court of the county asking for the appointment of highway surveyors to lay out a public road, beginning at a certain well-defined point and running in a certain direction to another well-defined point, the place of ending. You will see that the route was generally defined in the application, regardless of hills and grades that might be encountered, before ever the surveyors went upon the ground, so that if the surveyors were at all inclined to select the best route, their hands were virtually tied as to the best location

and most feasible route. The writer well knows from long years of experience, as both practical surveyor and highway surveyor, wherein he has been an unwilling party, and, in more than one instance, where he has utterly refused to lay out a road over the ground selected by the applicants. To-day these are some of the roads that we are called upon to improve.

I have now briefly outlined the causes that make it imperative for modern road improvement to relocate in part, or in the whole, the road to be improved, in order to meet two requirements—first, to bring the grades within the maximum limits required by the State authorities; and second, to reduce the expense of such improvement to a minimum.

Sussex county was one of the last counties in the State to commence the improvement of its highways and has progressed slowly, there now being only about thirty miles of improved roads finished and in process of completion, five miles of which have been built without State aid, and upon that portion the grades were not kept down to the State's requirements. The roads so improved have all been under the writer's supervision and have generally been the main roads leading over the mountains, the most difficult sections to improve, as to question of grading. To reduce grades, running anywhere from twelve to eighteen per cent. down to five per cent., and, at the same time, keep down the expense of such improvement, is no easy problem.

In 1903 there were improved one and three-quarter miles of road leading over the Blue Mountain. This road was a portion of an old turnpike having grades reaching twelve and one-half per cent., climbing a hill, dropping into a valley, again climbing another hill, and so on to the top of the mountain. It was relocated its entire length, and, in relocating, the contours of the mountain were followed up a ravine and no grade exceeded five and one-half per cent., and in no place in the entire length was any reverse grade encountered. The cost of said road was far less than it would have been had the line of the old road been followed, even though with a far greater per cent. of grade, and by such change the length was increased but 600 feet.

Within the past year another portion of the same turnpike has been improved from the summit of the mountain down the same, and through the foot hills to the borough of Branchville, a distance

of three and one-half miles. The old road showed grades of fourteen per cent., while the improved road was constructed on a maximum grade of four and one-half per cent. by relocating two sections at a greatly reduced cost from that required to grade the old road with an additional length of only 390 feet over that of the old road.

A portion of the Morris turnpike, leading from Newton to Stanhope, a distance of nine and three-quarter miles, is now in process of improvement. This road also crosses a mountain, and, as originally laid out, showed grades of fifteen per cent., with no possible way to cut them down to the requirements without a heavy expense, but by relocation in five separate short sections, at a nominal expense, the grades were brought down to a maximum of five per cent., and by the several changes the length was increased only 164 feet over that of the old road.

Another road under the writer's charge, leading from the celebrated mining town of Franklin Furnace over the Stockholm mountain to the Passaic county line, a distance of five and three-quarter miles, was surveyed last year and is now under construction. This has been one of the most difficult problems the writer has had to contend with. The grades of the old road reaching seventeen per cent., about two-thirds of the entire distance was relocated, mostly through the forest and at a maximum grade of six per cent. This relocation cut out several very dangerous railroad crossings and required the building of one bridge 210 feet in length, crossing a ravine and the railroad. This bridge will cost about \$10,000, which the railroad company has agreed to build in consideration of the elimination of the several grade crossings, which elimination was possible only by relocation of road. The improved road will be three-eighths of a mile shorter than the old road. When this road is completed the writer believes it will be one of the most picturesque roads in the county, if not in the State, and at a cost not far above the cost of improved roads in the valleys where improvements are held strictly to the line of the old roads.

In conclusion, I would say that the engineer must expect to receive his full share of criticism, in his judgment of relocating, by many of the taxpayers before the work is completed. It has come to the writer's ears more than once from the inexperienced that he

(the writer) must be crazy to attempt to build a road against the mountain side, in order to cut down grades and save expense, when there is the old roadbed already built, but the writer has consoled himself by a remark once made to him by our deceased friend, the Honorable Henry I. Budd, former State Road Commissioner. He said, "You must expect to be criticised; they will curse you now but the day is coming when they will bless you."

Cost of Roads.

Detailed statement of the cost of the English Creek road, township of Egg Harbor, county of Atlantic. Total length, 35,470 feet, or 6.72 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 35,470 feet.

Depth of gravel-bed, 4 to 8 inches.

Gravel, 13,137.03 cubic yards, at 70 cents; total.....	\$9,195 92
Earth excavation, 13,838.60 cubic yards, at 30 cents; total.....	4,151 58
Grubbing, 7.28 acres, at \$75; total.....	546 00
Total	\$13,893 50
Supervisor's salary	474 00
Engineering expenses	693 62
Total cost of road.....	\$15,061 12
Lump sum, contract price.....	\$13,872 30
Total allowed by the State.....	13,872 30
One-third of above, amount paid by the State.....	4,624 10
Maximum grade before	6.00 per cent.
Maximum grade after.....	3.94 per cent.

E. D. RIGHTMIRE,
Engineer.
LEWIS H. SMITH,
Supervisor.

Detailed statement of the cost of the Chestnut Neck road, city of Port Republic, county of Atlantic. Total length, 2,750 feet, or .52 miles.

Width of gravel-bed, 27.5 feet.

Length of gravel-bed, 2,750 feet.

Depth of gravel-bed, 3 to 8 inches.

Gravel, 1,384 cubic yards, at 60 cents; total.....	\$830 40
Earth excavation, 6,348 cubic yards, at 45 cents; total.....	2,856 60
Sod banks, 5,200 lineal feet, at 10 cents; total.....	520 00
Road railing, 5,200 lineal feet, at 18 cents; total.....	936 00
Total	\$5,143 00

Supervisor's salary	189 00
Engineering expenses	257 15
Extras, paid by county.....	108 00
Total cost of road.....	<u>\$5,697 15</u>
Lump sum, contract price.....	\$5,143 00
Total allowed by the State.....	5,143 00
One-third of above, amount paid by the State.....	1,714 33
Maximum grade before.....	Level.
Maximum grade after.....	Level.

E. D. RIGHTMIRE,
Engineer.
 JOHN K. JOHNSON,
Supervisor.

Detailed statement of the cost of the Paterson Plank road, boroughs of East Rutherford and Carlstadt, county of Bergen. Total length, 12,186 feet, or 2.31 miles.

Width of stone-bed, 18 feet.
 Length of stone-bed, 12,186 feet.
 Depth of stone-bed, 8 inches.

Macadam, with asphaltum binder, 24,125 square yards, at 90 cents; total	\$21,712 00
Earth embankment, 116,000 cubic yards, at 88 cents; total.....	102,080 00
Extra oil on road, 16,209 gallons, at 7½ cents; total.....	<u>1,215 67</u>
Total	\$125,007 67
Supervisor's salary	780 00
Total cost of road.....	<u>\$125,787 67</u>
Lump sum, contract price.....	\$123,792 00
Total allowed by the State.....	125,007 67
One-third of above, amount paid by the State.....	41,669 22
Maximum grade before.....	Level.
Maximum grade after.....	Level.

RALPH D. EARLE, JR.,
Engineer.
 HENRY WESTDYKE,
Supervisor.

COMMISSIONER OF PUBLIC ROADS.

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Detailed statement of the cost of River road, borough of Edgewater, county of Bergen. Total length, 12,867 feet, or 2.437 miles.

Width of stone-bed, 20, 22 and 26 feet.

Length of stone-bed, 12,857.58 feet.

Depth of stone-bed, 7 inches.

Macadam, with tar binder, 29,087 square yards, at 55 cents; total,	\$15,997 85
Macadam, with one-half gallon tar additional application, 29,087 square yards, at 9 cents; total.....	2,617 83
Earth excavation, 14,477.00 } 16,577.22 cubic yards, at 60 cents;	
“ “ 2,100.22 } total	9,946 33
Rock excavation, 176.76 cubic yards, at \$4; total.....	707 04
Extra embankment, 2,973 } 3,225 cubic yards, at 50 cents; total,	1,612 50
“ “ 252 }	
Belgian block gutter, 8,390.65 square yards, at \$2.72; total.....	22,822 57
Belgian block gutter, relaid, 145 square yards, at \$1; total.....	145 00

Total \$53,849 12

Division “B,” paid by borough—

1 culvert, 54.85 lineal feet.....	\$164 55
8-inch terra-cotta pipe, 1,004 lineal feet.....	502 00
12-inch terra-cotta pipe, 1,828 lineal feet.....	1,371 00
Dry rubble masonry walls, 5,051.59 cubic yards,	17,680 56
Rubble masonry walls, 1,162.66 cubic yards....	5,231 97
Coping, 406 lineal feet.....	203 00
Catch basins	1,486 00
Guard rail, 6,233.50 lineal feet.....	1,870 05
Bluestone monuments, 56.....	134 50
Tearing down house and removing same.....	200 00
Braces to fences, 111.....	55 50
New flag to be furnished, 1,125 lineal feet.....	900 00
Crosswalks, 141.73 square feet.....	85 04
Macadam, for street intersections, 608.73 square yards, at 60 cents.....	365 24

30,249 41

Supervisor's salary	1,017 00
Engineering expenses	5,668 55

Total cost of road..... \$90,784 08

Lump sum, contract price, as per bid.....	\$65,096 98
Total allowed by the State.....	53,849 12
One-third of above, amount paid by the State.....	17,949 71

Maximum grade before.....12.80 per cent.

Maximum grade after.....10.34 per cent.

WATSON G. CLARK,

Engineer.

GEORGE HOOK,

Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of Yesler Way, Piermont, Fairview, Lawrence and Magnolia avenues, Magnolia avenue, Washington avenue and Summit avenue, township of Hillsdale, county of Bergen. Total length, 14,021.4 feet, or 2.656 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 14,021.4 feet.

Depth of stone-bed, 6 inches.

Macadam, 21,811.1 square yards, at 58 cents; total,.....	\$12,650 44
Earth excavation, 15,465 cubic yards, at 30 cents; total.....	4,740 90
Total	\$17,391 34
Supervisor's salary	486 00
Engineering expenses	869 57
Extras, paid by township.....	103 81
Total cost of road.....	\$18,850 72
Lump sum, contract price.....	\$17,391 34
Total allowed by the State.....	17,391 34
One-third of above, amount paid by the State.....	5,797 11
Maximum grade before.....	12 per cent.
Maximum grade after.....	6.50 per cent.

H. G. HERING, JR.,
Engineer.
CHRISTIAN DEIS,
Supervisor.

Detailed statement of the cost of Valley road, Haworth drive and Flatts road, borough of Haworth, county of Bergen. Total length, 16,527.06 feet, or 3.13 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 16,452 feet.

Depth of stone-bed, 4 inches.

Macadam, 26,441.93 square yards, at 43.5 cents; total.....	\$11,502 24
Earth excavation, 5,241.94 cubic yards, at 38.5 cents; total.....	2,018 15
Drain, 368 lineal feet, at 31 cents; total.....	114 08
Cobble stone gutter, 432.77 square yards, at 58 cents; total.....	251 00
Total	\$13,885 47
Supervisor's salary	502 50
Engineering expenses	843 81
Portions paid by borough—	
56 lineal feet of 12-inch pipe, at 81 cents.....	\$12 96
16 lineal feet of 15-inch pipe, at 81 cents.....	45 36
1 concrete culvert, at \$50.....	50 00
	108 32

COMMISSIONER OF PUBLIC ROADS.

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Extras paid by borough—

31 feet 10-inch tile pipe culvert surrounded in concrete, at \$1.25.....	\$38 75
3 concrete culvert ends, at \$5.....	15 00
8 pavement groutings at entrance to culverts, at \$2	16 00
	<hr/>
	69 75

Total cost of road.....	\$15,409 85
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Lump sum, contract price, including borough work.....	\$14,088 37
Total allowed by the State.....	13,885 47
One-third of above, amount paid by the State.....	4,628 49

Maximum grade before.....	8.39 per cent.
Maximum grade after.....	7 per cent.

WATSON G. CLARK,
Engineer.
SAMUEL I. ACKEN,
Supervisor.

Detailed statement of the cost of Bridge street, Crosswicks, township of Chesterfield, county of Burlington. Total length, 700 feet, or .132 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 675 feet.
Depth of stone-bed, 8 inches.

Macadam, 1,311.11 square yards, at 99 cents; total.....	\$1,297 99
Drain, 300 lineal feet, at 20 cents; total.....	60 00
Brick gutter, 500 square yards, at \$1.20; total.....	600 00

Total	\$1,957 99
Supervisor's salary	105 00
Engineering expenses	100 00
Extras, paid by county, additional macadam for shoulders.....	211 80

Total cost of road.....	\$2,374 79
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Lump sum, contract price.....	\$1,801 45
Total allowed by the State.....	1,801 45
One-third of above, amount paid by the State.....	600 48

Maximum grade before.....	12.6 per cent.
Maximum grade after.....	7.1 per cent.

JOHN H. HUTCHINSON,
Engineer.
CHARLES E. WOODWARD,
Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of the Camden and Blackwood Turnpike Extension, township of Gloucester, county of Camden. Total length, 12,693 feet, or 2.404 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 12,672 feet.
Depth of stone-bed, 8 inches.

Macadam, 19,712 square yards at \$1.05.....	}	total.....	\$27,448 20
Liquid asphalt, 15,000 gallons.....			
Earth excavation, 12,402.5 cubic yards, at 30 cents			
Rubble gutter, 3,880 square yards, at 75 cents....			
Extra rubble gutter, 720.23 square yards, at 75 cents; total.....			540 17
			<hr/>
			\$27,988 37
Less 600 feet drain, at 20 cents.....			120 00
			<hr/>
Total			\$27,868 37
Supervisor's salary.....			339 00
Engineering expenses.....			836 05
			<hr/>
Total cost of road.....			\$29,043 42
			<hr/>
Lump sum, contract price.....			\$27,448 20
Total allowed by the State.....			27,868 37
One-third of above, amount paid by the State.....			9,289 46
			<hr/>
Maximum grade before.....			6.70 per cent.
Maximum grade after.....			4.00 per cent.

J. J. ALBERTSON,

Engineer.

CHARLES C. STEVENSON,

Supervisor.

Detailed statement of the cost of the Evesham road, between townships of Centre, Clementon and Gloucester, county of Camden. Total length, 12,838 feet, or 2.43 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 12,814 feet.
Depth of stone-bed, 8 inches.

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Macadam, 19,932.88 square yards, at 90 cents.....	}	total..	\$21,232 18
Amiesite pavement on macadam base, 2,022 $\frac{2}{5}$ square yards			
Earth excavation, 8,334.8 cubic yards, at 25 cents.....			
Rubble gutter, 1,511.1 square yards, at 80 cents.....	}		
Rubble gutter, extra, 106.03 square yards, at 80 cents; total.....			
Ten-inch terra-cotta drain, 507 feet, at 50 cents; total.....			84 82
			253 50
Total			\$21,570 50
Supervisor's salary.....			432 00
Engineering expenses.....			647 11
Total cost of road.....			\$22,649 61
Lump sum, contract price.....			\$21,232 18
Total allowed by the State.....			21,570 50
One-third of above, amount paid by the State.....			7,190 17
Maximum grade before.....			6.40 per cent.
Maximum grade after.....			3.67 per cent.

J. J. ALBERTSON,
County Engineer.
 CHAS. J. RULON,
Supervisor.

Detailed statement of the cost of the Schellenger's Landing road, township of Lower, county of Cape May. Total length, 11,068 feet, or 2.096 miles.

Width of gravel-bed, 20 feet.
 Length of gravel-bed, 11,068 feet.
 Depth of gravel-bed, 4 and 9 inches.

Gravel, compacted, 4,475 cubic yards, at \$1.25; total.....	\$5,593 75
Earth excavation and embankment, 10,507 cubic yards, at 44 cents; total.....	4,623 08
Bulkhead, 820 lineal feet, at 81 cents; total.....	664 20
Grubbing, 2.67 acres, at \$130; total.....	347 10
Total	\$11,228 13
Less difference in calculation by quantities over lump sum bid...	634 92
Net total.....	\$10,593 21

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Supervisor's salary.....	423 00
Engineering expenses.....	529 66
Extras, paid by county.....	78 20
Total cost of road.....	\$11,624 07
Lump sum, contract price.....	\$10,593 21
Total allowed by the State.....	10,593 21
One-third of above, amount paid by the State.....	3,531 07
Maximum grade before.....	3.40 per cent.
Maximum grade after.....	1.10 per cent.

R. FENDALL SMITH,
Engineer.
 WALTER RUTHERFORD,
Supervisor.

Detailed statement of the cost of the Goshen road, second section, township of Middle, county of Cape May. Total length, 13,748.7 feet, or 2.603+ miles.

Width of gravel-bed, 20 feet.
 Length of gravel-bed, 13,748.7 feet.
 Depth of gravel-bed, 4 and 8 inches.

Gravel, Class A, 2,589 cubic yards, at \$1.98; total.....	\$5,126 22
Gravel, Class B, 2,546 cubic yards, at 70 cents; total.....	1,782 20
Earth excavation, 11,766 cubic yards, at 15 cents; total.....	1,764 90
Grubbing, 0.83 acres, at \$60; total.....	49 80
Bulkhead, 90 lineal feet, at \$2; total.....	180 00
Excess of lump sum bid over calculation by quantities.....	656 86
Total	\$9,559 98
Supervisor's salary	325 50
Engineering expenses	524 76
Extras, paid by county.....	935 28
Total cost of road.....	\$11,345 52
Lump sum, contract price.....	\$9,559 98
Total allowed by the State.....	9,559 98
One-third of above, amount paid by the State.....	3,186 66
Maximum grade before.....	3.40 per cent.
Maximum grade after.....	1.40 per cent.

R. FENDALL SMITH,
Engineer.
 EDWIN S. TOWNSEND,
Supervisor.

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Detailed statement of the cost of the Tuckahoe road, second section, township of Upper, county of Cape May. Total length, 22,513 feet, or 4.264 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 22,513 feet.

Depth of gravel-bed, 6 and 8 inches.

Compacted gravel, Class A, 4,955 cubic yards, at \$1.44.....	\$7,135 20
Compacted gravel, Class B, 4,864 cubic yards, at 90 cents.....	4,377 60
Earth excavation and embankment, 35,063 cubic yards, at 30 cents,	10,518 90
Grubbing, 3 $\frac{1}{4}$ acres, at \$125.....	406 25
Total	\$22,437 95
Less difference in calculation by quantities over lump sum bid....	95
Net total	\$22,437 00
Supervisor's salary	471 00
Engineering expenses	814 04
Extras, paid by county, for culverts, iron pipe, &c.....	821 30
Total cost of road.....	\$24,543 34
Lump sum, contract price.....	\$22,437 00
Total allowed by the State.....	22,437 00
One-third of above, amount paid by the State.....	7,479 00
Maximum grade before.....	4.1 per cent.
Maximum grade after.....	1.6 per cent.

R. FENDALL SMITH,

Engineer.

WASHINGTON VAN GILDER,

Supervisor.

Detailed statement of the cost of the Rio Grande road, township of Middle, county of Cape May. Total length, 15,350 feet, or 2.907 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 15,330 feet.

Depth of gravel-bed, 3 and 9 inches.

Compacted graded, Class A, 2,887.4 cubic yards, at \$2.15; total..	\$6,207 91
Compacted gravel, Class B, 2,835.2 cubic yards, at \$1.19; total..	3,373 88
Earth excavation and embankment, 10,401 cubic yards, at 34 cents; total	3,536 34
Grubbing, 1.8 acres, at \$80; total.....	144 00
Excess of lump sum bid over calculation by quantities.....	2,406 45
<hr/> Total	\$15,668 58
Supervisor's salary	303 00
Engineering expenses	563 38
Extras, paid by county, iron drain pipe, &c.....	428 03
<hr/> Total cost of road.....	\$16,962 99
<hr/> Lump sum, contract price.....	\$15,668 58
Total allowed by the State.....	15,668 58
One-third of above, amount paid by the State.....	5,222 86
 Maximum grade before.....	2.90 per cent.
Maximum grade after.....	0.70 per cent.

R. FENDALL SMITH,
Engineer.

R. C. HOLMES,
Supervisor.

Detailed statement of the cost of the White House and Flemington road, second section, townships of Readington and Raritan, county of Hunterdon. Total length, 30,979 feet, or 5.867 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 30,778 feet.
Depth of stone-bed, 6 inches.

Macadam, plain, 47,948 square yards, at 52 cents; total.....	\$24,932 96
Macadam driveways, 590 square yards, at 65 cents; total.....	383 50
Earth excavation, without classification, 33,890 cubic yards, at 40 cents; total.....	13,556 00
Extra excavation, 613 cubic yards, at 70 cents; total.....	429 10
Drain, 5,780 lineal feet, at 23 cents; total.....	1,329 40
Cobble stone gutter, 224 square yards, at 65 cents; total.....	145 60
<hr/> Total	\$40,776 56

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Supervisor's salary.....	643 50
Extras, paid by county, pipes and cross drains.....	1,514 40
Total cost of road.....	\$42,934 46
Lump sum, contract price.....	\$39,886 51
Total allowed by the State.....	40,776 56
One-third of above, amount paid by the State.....	13,592 19
Maximum grade before.....	14 per cent.
Maximum grade after.....	6 per cent.

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

Detailed statement of the cost of the improvements to the public highway in Mercer county, known as the North Crosswicks road, beginning at Trenton and Crosswicks road, and extending to Crosswicks bridge, in the township of Hamilton. Total length of road, 1,174½ feet, or 0.22 miles.

Length of stone-bed, 1,174½ feet.

Width of stone-bed, 16 feet.

Depth of stone-bed, Class B, or not less than six (6) inches deep.

Average width of shoulders—from Sta. 0 to Sta. 7+50, ten (10) feet; from Sta. 7+50 to end of road, five (5) feet.

Average total width of improved roadway—From Sta. 0 to Sta. 7+50, thirty-six (36) feet; from Sta. 7+50 to end of road, twenty-six (26) feet.

Excavations, 360 cubic yards, at 35 cents; total.....	\$126 00
Macadam, 2,467 square yards, at 85 cents.....	2,096 95
Total cost.....	\$2,222 95
Lump sum, contract price.....	\$2,222 95
Supervisor's salary.....	132 00
Total of all costs.....	\$2,354 95
Portion approved by the State.....	\$2,222 95
Total allowed by the State.....	2,222 95
One-third of above, paid by the State.....	740 98

Maximum grade before.....	4.6 per cent.
Maximum grade after.....	4.0 per cent.

FRANK J. EPPELE,
Engineer.
 WM. E. FORD,
Supervisor.

Detailed statement of the cost of the improvements to the public highway in Mercer county, known as the Hopewell and Stoutsburg road, beginning at westerly line of borough of Hopewell and extending to Somerset county line, in the township of Hopewell. Total length of road, 10,720 feet, or 2.03 miles.

Length of stone-bed, 10,666 feet.
 Width of stone-bed, 22.8 feet to 24 feet wide through borough;
 balance, 14 feet wide.
 Depth of stone-bed, Class B, or not less than six (6) inches deep.
 Average width of shoulders, seven (7) feet.
 Average total width of improved roadway through borough, 33.2
 feet; beyond borough, 28 feet.

Excavations, 7,550 cubic yards, at 30 cents; total.....	\$2,265 00
Macadam, 22,146 square yards, at 51 cents; total.....	11,294 66
Macadam driveways, 218 square yards, at 51 cents; total.....	111 18
Underdrains, 4,600 lineal feet, at 15 cents; total.....	690 00

Total cost.....	\$14,360 64
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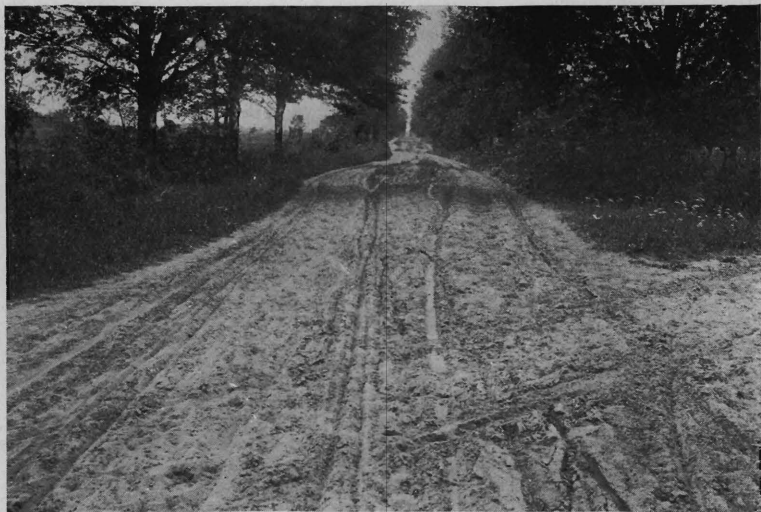
Lump sum, contract price.....	\$14,360 64
Supervisor's salary.....	432 00

Total of all costs.....	\$14,792 64
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Portion approved by the State.....	\$14,360 64
Total allowed by the State.....	14,360 64
One-third of above, paid by the State.....	4,786 88

Maximum grade before.....	7.65 per cent.
Maximum grade after.....	5.00 per cent.

FRANK J. EPPELE,
Engineer.
 ROBERT BROPHY,
Supervisor.



Middlesex County, Seventh Street, Before.



Middlesex County, Seventh Street, After Completion. Amiesite.

COMMISSIONER OF PUBLIC ROADS.

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Detailed statement of the cost of the improvements to the public highway in Mercer county known as the Hopewell and Stoutsburg road, beginning at westerly line of borough of Hopewell and extending to Somerset county line, in the township of Hopewell. Total length of road, 10,720 feet, or 2.03 miles.

Length of stone-bed, 10,666 feet.

Width of stone-bed, 22.8 feet to 24 feet wide through borough; balance, 14 feet wide.

Depth of stone-bed, Class B, or not less than six (6) inches deep.

Average width of shoulders, seven (7) feet.

Average total width of improved roadway through borough, 33.2 feet; beyond borough, 28 feet.

To applying liquid asphalt in the construction of the Hopewell and Stoutsburg road, as per contract, dated September 24th, 1908,	
22,146 square yards, at 6 cents.....	\$1,328 76
Total cost	\$1,328 76
Lump sum, contract price.....	\$1,328 76
Portion approved by the State.....	1,328 76
Total allowed by the State.....	1,328 76
One-third of above, paid by the State.....	442 92

Maximum grade before.....	7.65 per cent.
Maximum grade after.....	5.00 per cent.

FRANK J. EPPELE,

Engineer.

ROBERT BROPHY,

Supervisor.

Detailed statement of the cost of the Cheesequakes Creek road, township of Madison, county of Middlesex. Total length, 10,588 feet.

Width of stone-bed, 14 feet.

Length of stone-bed, 10,400 feet, or 1.97 miles.

Depth of stone-bed, 8 inches.

Macadam, 16,178 square yards, at 88.705+ cents; total.....	\$14,350 74
Earth excavation, 28,016 cubic yards, at 40 cents; total.....	11,206 40
Extra excavation, intersecting roads and driveways, 1,200 cubic yards, at 40 cents; total.....	480 00
Extra drain, 7,695 lineal feet, at 18 cents; total.....	1,385 10
Brick bats, 2,760 cubic yards, at \$1.25; total.....	3,450 00
Extra excavation for brick bats, 2,126 cubic yards, at 40 cents; total	850 40
Total	\$31,722 64

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Supervisor's salary	1,150 50
Extras, paid by county, pipes, culverts, &c.	493 76
Total cost of road.....	\$33,366 90
Lump sum, contract price.....	\$25,557 14
Total allowed by the State.....	31,722 64
One-third of above, amount paid by the State.....	10,574 21
Maximum grade before.....	10.8 per cent.
Maximum grade after.....	4.2 per cent.

MORGAN F. LARSON,

Engineer.

FRANK P. LAMBERTSON,

Supervisor.

Detailed statement of the cost of the Jamesburg and Helmetta road, borough of Jamesburg, county of Middlesex. Total length, 6,967 feet, or 1.32 miles.

Width of stone-bed, 14 feet.
 Length of stone-bed, 6,967 feet.
 Depth of stone-bed, 8 inches.

Macadam, with asphaltum binder, 11,103 square yards, at 85 cents; total	\$9,437 55
Earth excavation, 2,424 cubic yards, at 25 cents; total.....	606 00
Extra excavation, 350 cubic yards, at 50 cents; total.....	175 00
Extra drain, 160 lineal feet, at 15 cents; total.....	24 00
Macadam driveways, 33 square yards, at 50 cents; total.....	16 50
Total	\$10,259 05
Supervisor's salary	264 60
Extras, paid by county, extra macadam driveways, 518 square yards, at 50 cents.....	259 00
Total cost of road.....	\$10,782 65
Lump sum, contract price.....	\$10,060 05
Total allowed by the State.....	10,259 05
One-third of above, amount paid by the State.....	3,419 68



Middlesex County, Trenton Turnpike. From Monmouth Junction Road, looking south, Before.



Middlesex County, Trenton Turnpike, Asphalt Binder. From Monmouth Junction Road, looking south, After.

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Maximum grade before.....	5.6 per cent.
Maximum grade after.....	3.93 per cent.

MORGAN F. LARSON,
Engineer.
F. W. EULNER,
Supervisor.

Detailed statement of the cost of the Trenton turnpike, township of South Brunswick, county of Middlesex. Total length, 13,227 feet, or 2.505 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 13,227 feet.
Depth of stone-bed, 8 inches.

Macadam, with asphaltum binder, 23,584 square yards, at 81.102 + cents; total	\$19,127 17
Earth excavation, 13,731 cubic yards, at 30 cents; total.....	4,119 30
Extra excavation, 935 cubic yards, at 50 cents; total.....	467 50
Macadam driveways, 464 square yards, at 50 cents; total.....	232 00
Extra macadam driveways, 59 square yards, at 50 cents; total....	29 50
Extra macadam, 159 square yards, at 83 cents; total.....	131 97
Total	\$24,107 44
Supervisor's salary	402 00
Total cost of road.....	\$24,509 44
Lump sum, contract price	\$23,478 47
Total allowed by the State.....	24,107 44
One-third of above, amount paid by the State.....	8,035 81
Maximum grade before.....	5.1 per cent.
Maximum grade after.....	3.4 per cent.

MORGAN F. LARSON,
Engineer.
GEORGE E. WILLIAMSON,
Supervisor.

Detailed statement of the cost of the Helmetta and Spotswood road, township of East Brunswick, county of Middlesex. Total length, 14,271 feet, or 2.703 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 14,271 feet.
Depth of stone-bed, 8 inches.

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Macadam, with asphaltum binder, 22,248 square yards, at 83 cents; total	\$18,465 84
Earth excavation, 7,949 cubic yards, at 25 cents; total.....	1,987 25
Extra excavation, 99 cubic yards, at 50 cents; total.....	49 50
Macadam driveways, 92 square yards, at 50 cents; total.....	46 00
Extra macadam driveways, 898 square yards, at 50 cents; total..	449 00
Total	\$20,997 59
Supervisor's salary	378 00
Total cost of road.....	\$21,375 59
Lump sum, contract price.....	\$20,649 09
Total allowed by the State.....	20,997 59
One-third of above, amount paid by the State.....	6,999 20
Maximum grade before.....	5.3 per cent.
Maximum grade after.....	1.125 per cent.

MORGAN F. LARSON,

Engineer.

S. ELMER VANDENBERGH.

Supervisor.

Detailed statement of the cost of the Plainsboro and Cranbury road, township of Cranbury, county of Middlesex. Total length, 12,992 feet, or 2.46 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 12,992 feet.

Depth of stone-bed, 6 inches.

Macadam, with asphaltum binder, 20,338 square yards, at 90 cents; total	\$18,304 20
Earth excavation, 7,675 cubic yards, at 28 cents; total.....	2,149 00
Extra excavation, 90 cubic yards, at 50 cents; total.....	45 00
Drain, 1,200 lineal feet, at 20 cents; total.....	240 00
Belgian block gutter, 79.5 square yards, at \$2.25; total.....	178 87
Macadam driveways, 234 square yards, at 60 cents; total.....	140 40
Extra macadam driveways, 321 square yards, at 60 cents; total..	192 60
Total	\$21,250 07
Supervisor's salary	346 50
Total cost of road.....	\$21,596 57

COMMISSIONER OF PUBLIC ROADS.

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Lump sum, contract price.....	\$20,833 60
Total allowed by the State.....	21,250 07
One-third of above, amount paid by the State.....	7,083 36

Maximum grade before.....	3.1 per cent
Maximum grade after.....	1.7 per cent.

MORGAN F. LARSON,

Engineer.

F. F. GROVE,

Supervisor.

Detailed statement of the cost of the Cranbury and South River turnpike, township of South Brunswick, county of Middlesex. Total length, 12,997 feet, or 2.461 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 12,997 feet.

Depth of gravel bed—in center, 9 inches; at sides, 3 inches.

Gravel, 4,895 cubic yards, at 72.0214 cents; total.....	\$3,525 45
Earth excavation, 7,609 cubic yards, at 27 cents; total.....	2,054 43
Total	\$5,579 88
Supervisor's salary	333 00
Total cost of road.....	\$5,912 88

Lump sum, contract price.....	\$5,774 88
Total allowed by the State.....	5,579 88
One-third of above, amount paid by the State.....	1,859 96

Maximum grade before.....	7.3 per cent.
Maximum grade after.....	2.1 per cent.

MORGAN F. LARSON,

Engineer.

D. G. ROWLAND,

Supervisor.

Detailed statement of the cost of the Allentown and Imlaystown road, township of Upper Freehold, county of Monmouth. Total length, 19,670 feet, or 3.725 miles.

Width of gravel-bed, 18 feet.

Length of gravel-bed, 19,670 feet.

Depth of gravel-bed, 9 and 3 inches.

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Gravel, Class A, 3,178 cubic yards, at \$1.40; total.....	\$4,449 20
Gravel, Class B, 3,678 cubic yards, at \$1.10; total.....	4,045 80
Earth excavation, 11,500 cubic yards, at 25 cents; total.....	2,875 00
Grubbing, 1 acre, at \$50; total.....	50 00
Drain, 6,000 lineal feet, at 20 cents; total.....	1,200 00
Excess of lump sum bid over calculation by quantities.....	1,111 00
Total	\$13,731 00
Supervisor's salary	408 00
Engineering expenses	411 93
Total cost of road.....	\$14,550 93
Lump sum, contract price.....	\$13,731 00
Total allowed by the State.....	13,731 00
One-third of above, amount paid by the State.....	4,577 00
Maximum grade before.....	2.08 per cent.
Maximum grade after.....	1.46 per cent.

PETER FORMAN,

Engineer.

WILLIAM H. MOORE,

Supervisor.

Detailed statement of the cost of the Keyport and South Amboy road, in borough of Keyport and Matawan township, Monmouth county. Total length, 6,300 feet, or 1.2 miles.

Width of stone-bed, 16 feet.

Length of stone-bed, 5,987.81 feet.

Depth of stone-bed, 8 inches.

Macadam, 10,645 square yards, at 72 cents; total.....	\$7,664 40
Excavation, without classification, 13,124.26 cubic yards, at 30 cents; total	3,937 29
Drains, 4,180 lineal feet, at 12 cents; total.....	501 60
Macadam cross roads, 182.88 square yards, at 72 cents.....	131 67
Extra excavation, cross roads, &c., 2,160.77 cubic yards, at 30 cents; total	648 23
Telford foundation, 2,631 square yards, at 53 cents; total.....	1,394 43
Excavating for Telford, 745.18 cubic yards, at 30 cents; total....	223 55
Cobble stone gutters, 74.5 square yards, at \$1.15; total.....	85 67
Total	\$14,586 84
Supervisor's salary	846 00
Engineering expenses	437 60
Extras, paid by county, Telford brick work and pipe.....	979 77
Total cost of road.....	\$16,850 21

COMMISSIONER OF PUBLIC ROADS.

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Lump sum, contract price.....	\$11,601 69
Total allowed by the State.....	14,586 84
One-third of above, amount paid by the State.....	4,862 28
Maximum grade before.....	5.26 per cent.
Maximum grade after.....	3.50 per cent.

H. S. SPROUL,

Engineer.

DE WITT S. ANDERSON,

Supervisor.

Detailed statement of the cost of the Lakewood and Adelpia road, first section, county of Monmouth, Total length, 11,400 feet, or 2.16 miles.

Width of gravel-bed, 14 feet.

Length of gravel-bed, 11,400 feet.

Depth of gravel-bed, 8 inches.

Gravel, 4,000 cubic yards, at \$1.35; total.....	\$5,400 00
Earth excavation, 8,900 cubic yards, at 25 cents; total.....	2,225 00
Grubbing, 2 acres, at \$50; total.....	100 00
Drain, 800 lineal feet, at 9 cents; total.....	72 00

\$7,797 00

Less excess of calculation by quantities over lump sum bid.....	297 00
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Total	\$7,500 00
Supervisor's salary	351 00
Engineering expenses	300 00

Total cost of road.....\$8,151 00

Lump sum, contract price.....	\$7,500 00
Total allowed by the State.....	7,500 00
One-third of above, amount paid by the State.....	2,500 00

Maximum grade before.....	3.0 per cent.
Maximum grade after.....	2.1 per cent.

PETER FORMAN,

Engineer.

ARTHUR G. PATTON,

Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of the Lakewood and Alligator road, township of Lakewood, county of Ocean. Total length, 15,140 feet, or 2.867 miles.

Width of gravel-bed, 13,357 feet, 24 feet wide; 1,783 feet, 36 feet wide.

Length of gravel-bed, 15,140 feet.

Depth of gravel-bed, 9 and 3 inches.

Grubbing, 2.55 acres, at \$50; total.....	\$127 50
Turfing, 4,399 square yards, at 20 cents; total.....	879 80
Gravel, 7,136 $\frac{1}{2}$ cubic yards, at 84 cents; total.....	5,994 61
Earth excavation, 28,425 cubic yards, at 24 cents; total.....	6,822 00

Total	\$13,823 91
Supervisor's salary	810 00
Engineering expenses	414 72

Total cost of road.....	\$15,048 63
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Lump sum, contract price.....	\$13,823 89
Total allowed by the State.....	13,823 89
One-third of above, amount paid by the State.....	4 607 96

Maximum grade before.....	6.2 per cent.
Maximum grade after.....	2.5 per cent.

I. H. CRAMER,

Engineer.

LOUIS E. FOULKES.

Supervisor.

Detailed statement of the cost of the Barnsboro turnpike, township of Upper Pittsgrove, borough of Elmer, county of Salem. Total length, 17,479 feet, or 3.31 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 17,479 feet.

Depth of gravel-bed, 6 to 8 inches.

Gravel, 7,553 cubic yards, at \$1.10; total.....	\$8,308 30
Earth excavation, 11,125 cubic yards, at 28 cents; total.....	3 115 00

	\$11,423 30
Excess of estimate by quantities over lump sum bid.....	450 00

Total	\$10,973 30
Supervisor's salary	280 50
Engineering expenses	486 00
Extras, paid by county.....	1,300 00

Total cost of road.....	\$13,039 80
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COMMISSIONER OF PUBLIC ROADS.

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Lump sum, contract price.....	\$10,973 30
Total allowed by the State.....	10,973 30
One-third of above, amount paid by the State.....	3,657 77

Maximum grade before.....	2.98 per cent.
Maximum grade after.....	1.165 per cent.

H. B. KEASBEY,
Engineer.

BENJ. ELWELL,
Supervisor.

Detailed statement of the cost of the Penn's Grove and Dancer's Mill road, township of Upper Penn's Neck and borough of Penn's Grove, county of Salem.
Total length, 15,945 feet, or 3.02 miles.

Width of stone-bed, 14 and 16 feet.

Length of stone-bed, 15,945 feet.

Depth of stone-bed, 6 inches.

Macadam, 26,224 square yards, at 80 cents; total.....	\$20,979 20
Gravel fill, 5,277.60 cubic yards, at 45.0385 cents; total.....	2,376 92
Earth excavation, 7,986.25 cubic yards, at 24 cents; total.....	1,916 70
Extra macadam at intersections, 221.44 square yards, at 80 cents; total	177 15

Total	\$25,449 97
Supervisor's salary.....	487 50
Engineering expenses.....	661 95

Total cost of road.....	\$26,599 42
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Lump sum, contract price.....	\$25,272 82
Total allowed by the State.....	25,449 97
One-third of above, amount paid by the State.....	8,483 32

Maximum grade before.....	4.80 per cent.
Maximum grade after.....	1.30 per cent.

JOSIAH MILLER,

Engineer.

RICHARD F. SHANNON,

Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of the Alloway and Aldine road, second section, township of Alloway, county of Salem. Total length, 25,129 feet, or 4.76 miles.

Width of gravel-bed, 20 feet.

Length of gravel-bed, 25,129 feet.

Depth of gravel-bed, 9 and 3 inches.

Gravel, 9,340 cubic yards, at \$1.004; total.....	\$9,377 00
Earth excavation, 23,320 cubic yards, at 40 cents; total.....	9,328 00
Grubbing, 2.20 acres, at \$225; total.....	495 00
<hr/>	
Total	\$19,200 00
Supervisor's salary.....	747 00
Engineering expenses.....	853 99
Extras, paid by county.....	299 30
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Total cost of road.....	\$21,100 29
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Lump sum, contract price.....	\$19,200 00
Total allowed by the State.....	19,200 00
One-third of above, amount paid by the State.....	6,400 00
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Maximum grade before.....	9.0 per cent.
Maximum grade after.....	2.6 per cent.

JOSIAH MILLER,

Engineer.

CHARLES JOHNSON,

Supervisor.

Detailed statement of the cost of the Terrill road, township of North Plain-field, county of Somerset. Total length, 622 feet, or 0.118 miles.

Width of stone-bed, 14 feet.

Length of stone-bed, 622 feet.

Depth of stone-bed, 10 inches.

Telford, 1,003.7 square yards, at 79 cents; total.....	\$792 92
Earth excavation, in road, 61 cubic yards, at 40 cents.....	24 40
Earth excavation, outside of road, 360 cubic yards, at 30 cents; total	108 00
Drain, 50 lineal feet, at 30 cents; total.....	15 00
<hr/>	
Total	\$940 32
Supervisor's salary.....	48 00
Engineering expenses.....	25 85
<hr/>	
Total cost of road.....	\$1,014 17

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Lump sum, contract price.....	\$940 56
Total allowed by the State.....	940 32
One-third of above, amount paid by the State.....	313 44
Maximum grade before.....	0.50 per cent.
Maximum grade after.....	0.50 per cent.

JOSHUA DOUGHTY, JR.,
Engineer.

JOHN J. CLARKE,
Supervisor.

Detailed statement of the cost of the Green Brook road, township of North Plainfield, county of Somerset. Total length, 6,125 feet, or 1.16 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 6,125 feet.
Depth of stone-bed, 8 inches.

Macadam, with asphaltum binder, 9,528 square yards, at 70 cents; total	\$6,669 60
Four-inch macadam drives, 275 square yards, at 50 cents; total..	137 50
Earth excavation, 14,943 cubic yards, at 27 cents; total.....	4,034 61
Belgian block gutter, 300 square yards, at 25 cents; total.....	75 00
Cobble stone gutter, 465 square yards, at 80 cents; total.....	372 00
Shifting stone, remaking trench, removing fill, &c.....	457 38
Total	\$11,746 09
Supervisor's salary	237 00
Engineering expenses	486 46
Total cost of road.....	\$12,469 55
Lump sum, contract price (including removal of trees).....	\$11,288 71
Total allowed by the State.....	11,038 71
One-third of above, amount paid by the State.....	3,679 57
Maximum grade before.....	3.5 per cent.
Maximum grade after.....	2.64 per cent.

JOSHUA DOUGHTY, JR.,
Engineer.
CHARLES P. SEBRING,
Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of the Stoutsburg and Blawenburg road, township of Montgomery, county of Somerset. Total length, 10,845 feet, or 2.054 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 10,845 feet.
Depth of stone-bed, 8 inches.

Telford, with asphaltum binder, 16,870 square yards, at 90 cents; total	\$15,183 00
Four-inch macadam drives, 440 square yards, at 50 cents; total..	220 00
Earth excavation, 6,538½ cubic yards, at 40 cents; total.....	2,615 33
Drain, 3,570 lineal feet, at 20 cents; total.....	714 00
Cobble stone gutter, 100 square yards, at 40 cents; total.....	40 00
<hr/>	
Total (including 2,070 feet tile and 133½ cubic yards earth as extras)	\$18,772 33
Supervisor's salary	376 50
Engineering expenses	593 07
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Total cost of road.....	\$19,741 90
<hr/>	
Lump sum, contract price.....	\$18,285 00
Total allowed by the State.....	18,752 33
One-third of above, amount paid by the State.....	6,250 78
<hr/>	
Maximum grade before.....	4.5 per cent.
Maximum grade after.....	2.28 per cent.

JOSHUA DOUGHTY, JR.,
Engineer.

ABRAM SULLIVAN,
Supervisor.

Detailed statement of the cost of the Washington Valley road, townships of North Plainfield and Warren, county of Somerset. Total length, 10,735 feet, or 2.033 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 10,735 feet.
Depth of stone-bed, 8 inches.

Macadam, 16,700 square yards, at 62 cents; total.....	\$10,354 00
Four-inch macadam, 731 square yards, at 30 cents; total.....	219 30
Earth excavation, 19,300 cubic yards, at 40 cents; total.....	7,720 00
Rock excavation, 3,040.11 cubic yards, at \$1.25; total.....	3,800 13
Drain, 2,000 lineal feet, at 14 cents; total.....	280 00
Twenty-four-inch pipe, 650 lineal feet, at \$2.10; total.....	1,365 00
Cobble stone gutter, 320 square yards, at 30 cents; total.....	96 00
Re-locating approaches	147 65
<hr/>	
Total	\$23,982 08

COMMISSIONER OF PUBLIC ROADS.

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Supervisor's salary	612 00
Engineering expenses	1,441 50
Extras, paid by county.....	1,178 64
<hr/>	
Total cost of road.....	\$27,214 22
<hr/>	
Lump sum, contract price.....	\$21,600 05
Total allowed by the State.....	22,617 08
One-third of above, amount paid by the State.....	7,539 03
<hr/>	
Maximum grade before.....	11.0 per cent.
Maximum grade after.....	3.8 per cent.

JOSHUA DOUGHTY, JR.,
Engineer.

W. HOWARD TOMS,
Supervisor.

Detailed statement of the cost of the Frankford and Sandyston road, townships of Frankford and Sandyston, county of Sussex. Total length, 18,243 feet, or 3.455 miles.

Width of stone-bed, 14 feet.
Length of stone-bed, 18,243 feet.
Depth of stone-bed, 8 inches.

Macadam, 28,378 square yards, at 64 cents; total.....	\$18,161 92
Earth excavation, 28,600 cubic yards, at 36 cents; total.....	10,296 00
Rock excavation, 700 cubic yards, at \$1.60; total.....	1,120 00
Drain, 2,978 lineal feet, at 35 cents; total.....	1,042 30
Sluice pipes	1,888 00
Retaining wall, 235 cubic yards, at \$3.50; total.....	822 50
<hr/>	
Total	\$33,330 72
Supervisor's salary	600 00
Engineering expenses	619 60
Extras, paid by county.....	197 60
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Total cost of road.....	\$34,747 92
<hr/>	
Lump sum, contract price.....	\$32,079 17
Total allowed by the State.....	30,620 22
One-third of above, amount paid by the State.....	10,206 74
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Maximum grade before.....	12.0 per cent.
Maximum grade after.....	4.5 per cent.

A. H. KONKLE,

Engineer.

WILLIAM H. DALRYMPLE,

Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of Jefferson avenue, city of Plainfield, county of Union, and borough of Dunellen, county of Middlesex. Total length, 2,045 feet, or 0.387 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 2,045 feet.
Depth of stone-bed, 7 inches.

Macadam, with amiesite, 3,900 square yards, at 94 cents; total...	\$3,666 00
Slag fill, 6 inches deep, 1,991 square yards, at 15 cents; total.....	298 65
Earth excavation, 1,327 cubic yards, at 75 cents; total.....	995 25
Earth excavation (driveway), 8 cubic yards, at 50 cents; total...	4 00
Drain, 30 lineal feet, at 30 cents; total.....	9 00
Belgian block gutter, 194 square yards, at \$2; total.....	388 00
Macadam relaid, 138 square yards, at 30 cents; total.....	41 40
Macadam driveway, 23 square yards, at 50 cents; total.....	11 50
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Total	\$5,413 80
Supervisor's salary	291 00
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Total cost of road.....	\$5,704 80
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Lump sum, contract price.....	\$4,942 00
Total allowed by the State.....	5,398 30
One-third of above, amount paid by the State.....	1,799 44
<hr/>	
Maximum grade before.....	1.10 per cent.
Maximum grade after.....	0.58 per cent.

F. J. HUBBARD,
Engineer, Union County.
MORGAN F. LARSON,
Engineer, Middlesex County.
GEORGE HUFF,
Supervisor.

Detailed statement of the cost of the Terrill road, township of Fanwood and city of Plainfield, county of Union. Total length, 9,982 feet, or 1.89 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 9,974 feet.
Depth of stone-bed, 6 inches.

Macadam, with amiesite, 18,068 square yards, at 91 cents; total..	\$16,441 88
Macadam driveways, 461 square yards, at 32 cents; total.....	147 52
Earth excavation, 27,367 cubic yards, at 32½ cents; total.....	8,894 28
Earth excavation, 1,600 cubic yards, at 30 cents; total.....	480 00
Belgian block gutter, 44 square yards, at \$2.10; total.....	92 40
<hr/>	
Total	\$26,056 08
Supervisor's salary	348 00
<hr/>	
Total cost of road.....	\$26,404 08

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Lump sum, contract price.....	\$26.044 28
Total allowed by the State.....	26 044 28
One-third of above, amount paid by the State.....	8,681 43
Maximum grade before.....	4.9 per cent.
Maximum grade after.....	3.47 per cent.

F. J. HUBBARD,

Engineer.

CORNELIUS VAN HERWERDEN,

Supervisor.

Detailed statement of the cost of the Edgar road, Lenington street and Milton avenue, in the city of Rahway and township of Linden, county of Union. Total length, now completed, 17,526 feet, or 3.319 miles.

Width of stone-bed, 16 feet.
 Length of stone-bed, 17,300 feet.
 Depth of stone-bed, 8 inches.

Macadam, with asphaltum binder, 7,374 square yards, at 90 cents; total	\$6,636 60
Macadam, with asphaltum binder, 23,432 square yards, at \$1.05; total	24,603 60
Macadam, with asphaltum binder, 533 square yards, repairs, at 30 cents; total.....	159 90
Macadam, with asphaltum binder, 667 square yards, at 60 cents; total	400 20
Earth excavation, 26,068 cubic yards, at 33 cents; total.....	8,602 14
Drain, 1,000 lineal feet, at 25 cents; total.....	250 00
Cobble stone gutter, 700 square yards, at \$1; total.....	700 00
Total	\$41,352 74
Supervisor's salary.....	360 00
Extras, paid by county, bridges, culverts. pipes. &c.....	712 00
Total cost of road.....	\$42,424 74
Lump sum, contract price, inclusive of 700 feet to be done in 1910; as per contract of September 20, 1909.....	\$43,309 64
Total allowed by the State.....	41,352 74
One-third of above, amount paid by the State.....	13,784 24
Maximum grade before.....	4.00 per cent.
Maximum grade after.....	2.40 per cent.

J. L. BAUER,

Engineer.

CHARLES MAXFIELD,

Supervisor.

Detailed statement of the cost of the Washington avenue and Edgar road, in the city of Elizabeth and township of Linden, county of Union. Total length, 6,125 feet, or 1.16 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 6,125 feet.
Depth of stone-bed, 8 inches.

Macadam, with asphaltum binder, 5,296 square yards, at 90 cents; total	\$4,766 40
Macadam, with asphaltum binder, 6,133 square yards, at \$1; total,	6,133 00
Earth excavation, 5,498 cubic yards, at 30 cents; total.....	1,649 40
Drain, 1,950 lineal feet, at 30 cents; total.....	585 00
10 tees, in drain, at \$1.20; total.....	12 00
Digging ditch, as per agreement.....	50 00
<hr/>	
Total	\$13,195 80
Supervisor's salary.....	282 00
Extras, paid by county—	
2 street basins, at \$90.....	\$180 00
1 manhole	75 00
4 manhole heads reset, at \$3.....	12 00
156 feet 12-inch pipe, at 90 cents.....	140 40
Bridges, culverts, pipes, etc.....	345 00
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	752 40
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Total cost of road.....	\$14,230 20
<hr/>	
Lump sum, contract price, including manholes, &c., and improving 1,300-foot strip through railroad property.....	\$18,949 50
Total allowed by the State.....	13,195 80
One-third of above, amount paid by the State.....	4,398 60
<hr/>	
Maximum grade before.....	2.20 per cent.
Maximum grade after.....	1.70 per cent.

J. L. BAUER,
Engineer.
GUSTAV PEIN,
Supervisor.

Detailed statement of the cost of Walnut avenue and Central avenue, townships of Clark and Cranford, county of Union. Total length, 6,313 feet, or 1.195 miles.

Width of stone-bed, 16 feet.
Length of stone-bed, 6,313 feet.
Depth of stone-bed, 8 inches.

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Macadam, with amiesite, 9,797 square yards, at \$1.10; total.....	\$10,776 70
Macadam, with amiesite, 1,636 square yards, at \$1.20; total.....	1,963 20
Earth excavation, 7,698 cubic yards, at 30 cents; total.....	2,309 40
<hr/>	
Total	\$15.049 30
Supervisor's salary	309 00
Extras, paid by county, bridges, culverts, pipes, &c.....	510 00
<hr/>	
Total cost of road.....	\$15,868 30
<hr/>	
Lump sum, contract price.....	\$15,483 00
Total allowed by the State.....	15,049 30
One-third of above, amount paid by the State.....	5,016 43
<hr/>	
Maximum grade before.....	3.00 per cent.
Maximum grade after	2.50 per cent.

J. L. BAUER,
Engineer.
 JACOB STELL,
Supervisor.

Detailed statement of the cost of the Morris Turnpike extension, borough of Phillipsburg, county of Warren. Total length, 6,179 feet, or 1.17 miles.

Width of stone-bed, 14 and 16 feet.

Length of stone-bed, 6,173 feet.

Depth of stone-bed, 6 inches.

Macadam, 9,996 ³ / ₄ square yards, at 56 cents; total.....	\$5,598 26
Excavation without classification, 7,350 cubic yards, at 48 cents; total	3,528 00
Stone drain, 1,040 lineal feet.....	116 75
Cobble stone gutter, 669 ³ / ₄ square yards, at \$1; total.....	669 44
<hr/>	
Total	\$9,912 45
Supervisor's salary	189 00
Engineering expenses	170 00
Extras, paid by county, extra excavation at intersecting streets...	938 64
<hr/>	
Total cost of road.....	\$11,210 09
<hr/>	
Lump sum, contract price.....	\$9,795 70
Total allowed by the State.....	9,912 45
One-third of above, amount paid by the State.....	3,304 15
<hr/>	
Maximum grade before.....	8.92 per cent.
Maximum grade after.....	5.10 per cent.

S. W. SALMON,
Engineer.
 HOWELL MUTCHLER,
Supervisor.

SIXTEENTH ANNUAL REPORT.

Detailed statement of the cost of the New Brunswick turnpike extension, borough of Phillipsburg, county of Warren. Total length, 3,966 feet, or .75 mile.

Width of stone-bed, 16 feet.

Length of stone-bed, 3,966 feet.

Depth of stone-bed, macadam, 6 inches; telford-macadam, 8 inches.

Macadam, 5,902 square yards, at 76 cents; total.....	\$4,485 52
Telford-macadam, 1,148 $\frac{1}{2}$ square yards, at 85 cents; total.....	976 17
Excavation, without classification, 4,570 cubic yards, at 76 cents; total	3,473 20
Stone drain, 350 lineal feet.....	174 48
Total	<hr/> \$9,109 37
Supervisor's salary.....	189 00
Engineering expenses.....	152 00
Extras, paid by county—	
Piping	\$577 29
Extra excavation.....	44 60
	<hr/> 621 89
Total cost of road.....	<hr/> \$10,072 26
Lump sum, contract price, including iron pipe.....	\$9,213 05
Total allowed by the State.....	9,109 37
One-third of above, amount paid by the State.....	3,036 46
Maximum grade before.....	8.00 per cent.
Maximum grade after.....	3.70 per cent.

S. W. SALMON,

Engineer.

ARTHUR KNOWLES,

Supervisor.

NEW JERSEY STATE LIBRARY

APPENDICES.

Appendix A.

STANDARD STATE AID SPECIFICATIONS FOR STONE ROADS.

SPECIFICATIONS

FOR A STONE ROAD IN.....COUNTY, NEW
JERSEY, KNOWN AS.....
BEGINNING AT.....
EXTENDING TO.....
A DISTANCE OF.....FEET, OR.....MILES.
STONE.....FEET WIDE.....INCHES DEEP.
EARTH.....FEET WIDE. TOTAL WIDTH.....FEET.

WORK TO BE PERFORMED.

1. The work to be performed will consist in furnishing all material, tools, machinery and labor necessary for the efficient and proper grading of roadway, side ditches and side banks, laying, spreading and rolling of road metal, and all other work of construction incidental thereto, as hereinafter specified, and leaving the roadway complete in every manner ready for immediate use.

PLANS AND DRAWINGS.

2. The plan, profile and cross-sections on file in the office of the State Commissioner of Public Roads and at the office of.....
County Engineer.....New Jersey, show general location, profile, details and dimensions. The work will be constructed in all respects according to the above-mentioned plan, profile and cross-sections, which form part of these specifications.

3. Any variation of location, profile, size and dimensions from that shown on the plans, as may be required by the exigencies of construction, will, in all cases, be determined by the engineer, but the contractor shall not, on any pretense, save that of the written order of the contracting parties and the State

Commissioner of Public Roads, deviate from the intent of the plans or specifications.

4. On all drawings, figured dimensions are to govern in cases of discrepancy between scale and figures.

GRADING.

5. Under this head will be included all excavation and embankment required for the formation of the highway, cutting all ditches or drains about or contiguous to the road, removing all fences, walls, buildings, trees, poles or other encumbrances, the excavation and embankment necessary for reconstructing cross or branch roads or entrances to dwellings in cases where they are destroyed or interfered with in the formation of the roadway and all other excavations and embankments connected with or incidental to the construction of the said road.

EXCAVATION.

6. The roadway, intersecting, cross or branch roads and entrances to dwellings are to be excavated or built to the widths and depths as shown on plans and to a curvature to conform to the final surface of the road when finished. The grade, from center to sides, must not exceed three-quarters of an inch per foot.

7. The material taken from any cut or ditch shall be deposited where the engineer may direct, either within or without the line of the road, but no material shall be removed from the line of the road without the order of the engineer.

8. The grading shall be completed for the full width of the road, from gutter to gutter, before any macadamizing is commenced.

EMBANKMENT.

9. Material taken from the excavations, except when otherwise directed by the engineer, shall be deposited in the embankments, either on the roadway or sidewalks. Rejected or excess material will be used to increase the width of the embankments or deposited in spoil banks or waste piles, as and where the engineer may direct.

10. When there is not sufficient material in the excavations of the road to form the embankments, the deficiency must be supplied by the contractor from without the road. The character of said material and place of excavation must be approved by the engineer.

11. The embankments will be formed in layers of such depth, generally one (1) foot, and the material deposited and distributed in such a manner as the engineer may direct, the required allowance for settling being added. Each layer shall be carried across the entire width of the embankment and completed before commencing another, and this method shall be followed with each succeeding layer until the established grade is reached.

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SLOPES.

12. Slopes in both embankment and excavation shall be one and one-half ($1\frac{1}{2}$) horizontal to one (1) vertical, when the width of the road will permit, unless otherwise shown on cross sections; if the road is too narrow to allow the full slope within its side lines, the engineer shall not calculate the quantities, either in embankment or excavation, beyond said side lines, unless the required ground shall be first dedicated to the public in writing by the owner or owners thereof.

WIDTH AND DEPTH.

13. The construction to be.....inches deep and.....feet wide, as shown on plan and detail sheet.

Sub-Foundations.

14. When the excavations and embankments have been brought to a proper depth below the intended surface of the roadway, the cross-section thereof conforming in every respect to the cross-section of the road when finished, the same shall be rolled with a ten (10) ton standard steam macadam roller until approved by the engineer and supervisor. The roller shall be so constructed as to give a compressing power of not less than four hundred (400) pounds per lineal inch on drivers. If any depressions form under such rolling, owing to improper material or vegetable matter, the same shall be removed and good earth substituted, and the whole re-rolled until thoroughly solid and to above-mentioned grade. Water must be applied in advance of the roller when, in the opinion of the engineer and supervisor, it is necessary.

15. After the road-bed has been prepared and properly rolled the same shall be.....inches below the intended surface of the roadway, and the surface thereof shall not be disturbed by any unnecessary carting or hauling upon it, but if the surface is disturbed the same shall be re-formed and re-rolled before the spreading of stone is commenced.

FINAL FINISH OF SLOPES AND SHOULDERS.

16. The final finish of slopes and shoulders in both embankment and excavation, must be completed before the spreading of the second course of broken stone. After the spreading of the second course of broken stone no work will be allowed upon either slopes or shoulders that will tend to deposit any earth upon this course of stone or upon the finished surface of the macadam.

STONE CONSTRUCTION.

Telford Foundations.

17. After the road-bed has been formed and rolled as above specified, and has passed the inspection of the engineer and supervisor, a bottom course of stone, of an average depth of.....inches, is to be set by hand as a close,

firm pavement, the stones to be placed on their broadest edges lengthwise across the road in such manner as to break joints as much as possible, the breadth of the upper edge not to exceed four (4) inches. The interstices are then to be filled with stone chips, firmly wedged by hand with a hammer, and projecting points broken off. No stone of greater length than ten (10) inches or width of four (4) inches shall be used, except each alternate stone on outer edge, which shall be double the length of the others and well tied into the bed of the road. All stones with a flat, smooth surface must be broken. The whole surface of this pavement must be subjected to a thorough settling or ramming with heavy sledge-hammers, and thoroughly rolled with a..... ton.....roller. No stone larger than two and one-half ($2\frac{1}{2}$) inches shall be left loose on top of telford.

MACADAM.

First Course of Broken Stone.

18. After the road-bed has been formed and rolled as above specified, and has passed the inspection of the engineer and supervisor, the first layer of broken stone, consisting of two and one-half ($2\frac{1}{2}$) inch stone, or stone that will pass through a ring three (3) inches in diameter, shall be deposited in a uniform layer, having a depth of.....inches, and rolled repeatedly with a ten (10) ton standard steam macadam roller until compacted to the satisfaction of the engineer and supervisor. No stone in this course shall be less than two (2) inches in length.

19. The depth of loose stone in this and all other courses must be measured by blocks the required thickness of the said loose stone. These blocks must be placed at frequent intervals amid the loose stone when being spread.

BINDER ON FIRST COURSE OF BROKEN STONE.

20. On the first course of stone a quantity of stone screenings shall be spread in a uniform layer, and the whole rolled until the stone ceases to sink or creep in front of the roller. The quantity and quality of this binder shall be subject to the approval of the engineer and supervisor. Gravel found along the line of the road or furnished by the contractor, of a quality approved by the engineer, shall be used as a binder in addition to the stone screenings. The quantity and manner of applying the gravel shall be subject to the approval of the engineer and supervisor, but no binder shall be applied in sufficient quantity to completely cover or form a coating upon this course of stone.

SECOND COURSE OF BROKEN STONE.

21. The second course of broken stone shall consist of one and one-half ($1\frac{1}{2}$) inch stone; that is, every piece of stone shall be broken so that it can be passed through a ring two (2) inches in diameter, and no stone shall be more than two (2) inches nor less than one (1) inch long. This course shall be spread in a uniform layer having a depth of.....inches and rolled with a ten (10) ton standard steam macadam roller until thoroughly settled into place to the satisfaction of the engineer and supervisor. After the one and one-half ($1\frac{1}{2}$) inch stone has been rolled into place and is ready for the asphaltum binder, the road shall be protected from travel as much as

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possible. Should any mud, clay, sand, gravel or other foreign material get on the surface of the road before the binder is applied, it shall be removed and the one and one-half ($1\frac{1}{2}$) inch stone re-rolled into place, if necessary, before the binder is applied. In no case is the binder to be applied to moist or wet stone. During the rolling and until the top dressing of stone has been added, the road must be kept as free from dust and dirt of all kinds as possible.

The contractor will not be allowed to spread the second course of broken stone until he is ready to apply the asphaltum binder, as hereinafter specified. This should be done immediately after this course of stone is properly prepared. When so prepared and until its final finish the contractor must protect that portion of the roadway from all unnecessary travel that will tend to destroy the desired crown of the macadam.

ASPHALTUM BINDER.

22. When the second course of broken stone has been spread and rolled as above specified, asphaltum binder shall be applied by means of a mechanical distributor designed to evenly distribute the asphaltum binder, to regulate the width of distribution, to control the quantity distributed and to maintain the asphaltum binder at a uniform temperature.

23. The quantity of asphaltum binder required will be 1.2 gallons of residual bitumen per square yard of macadam surface, the temperature of which when applied shall be not less than 190° F. nor more than 200° F. Residual bitumen is to be determined as provided in Article 31, Section 7.

Before any binder is applied to the one and one-half ($1\frac{1}{2}$) inch stone, the contractor must have on hand the required amount of three-quarter ($\frac{3}{4}$) inch stone and screenings necessary to finish the road so the same can be applied at once after the rolling has been finished, also the quantity of the one and one-half ($1\frac{1}{2}$) inch stone coated at any one time shall not be so large but that there will be sufficient binder left in the car for the surface dressing.

24. After the application of the asphaltum binder the rolling shall continue until the stone ceases to sink or creep in front of the roller. The wheels of the roller are to be kept constantly wet so that they will not adhere to any of the coated stone during the rolling. The amount of rolling required to be done shall be subject to the approval of the engineer and supervisor.

25. Any depressions formed during the rolling, or from any other cause, are to be filled with one and one-half ($1\frac{1}{2}$) inch stone or three-quarter ($\frac{3}{4}$) inch stone or both, together with asphaltum binder, as ordered by the engineer, and the roadway then rolled until brought to the proper grade and curvature as determined by him. Additional asphaltum binder must also be applied in such quantities and at such points as directed by the engineer, so that the entire surface of the second course of stone will show a uniform quantity of asphaltum binder upon its face before the spreading of the surface course of stone.

SURFACE.

26. When the two courses of stone are rolled to the satisfaction of the engineer and supervisor, a coat of three-quarter ($\frac{3}{4}$) inch stone shall be spread of sufficient thickness to make a smooth and uniform surface to the road. This three-quarter ($\frac{3}{4}$) inch stone must not contain over five per cent. of material small enough to pass a screen having one-quarter inch openings and must be as free as possible from dust. A second application of the asphaltum

binder shall then be made at the rate of three-tenths (.3) of a gallon of residual bitumen per square yard, and after this second application of binder has thoroughly penetrated the three-quarter ($\frac{3}{4}$) inch stone, stone dust shall be applied in sufficient quantity to just fill the voids and the road again rolled until it becomes thoroughly consolidated, hard and smooth.

27. Rolling must be done by contractor with a ten (10) ton standard steam macadam roller, so constructed as to give a compressing power of not less than four hundred (400) pounds per lineal inch on drivers, approved by the engineer.

MANNER OF ROLLING.

28. In the rolling the roller must start from the side lines of the stone bed and work towards the center, unless otherwise directed. The rolling shall at all times be subject to the directions of the engineer and supervisor, who may, from time to time, direct such methods of procedure as in their opinion the necessities of the case may require.

WATER.

29. No water will be allowed in the construction of the macadam work. The stone to which the asphaltum binder is to be applied must be dry at the time the application is made, and should there be a shower or heavy dew this part of the work must stop until the stone has thoroughly dried.

QUALITY OF MATERIALS.

Broken Stone.

30. All stone must be as nearly cubical as possible, broken with the most approved modern stone-crushing machinery, free from all screenings, earth and other objectionable substances, of uniform size, and the same kind and quality, or equally as good in every particular, as that shown in the engineer's office. The one and one-half ($1\frac{1}{2}$) inch stone, three-quarter ($\frac{3}{4}$) inch and dust for binder and final finish must be of the best trap rock, free from loam or clay.

ASPHALTUM BINDER.

31. When the binder is made from a petroleum oil, it must pass the following test:

1. It must be uniform and homogeneous and show no segregation or stratification of the ingredients when cooled slowly from 165° C. (329° F.) without being disturbed or agitated. No cars of oil will be accepted containing lumps or layers of bitumen which have a higher viscosity test than that given for the oil itself.

2. It must not contain over four-tenths per cent. of mineral and organic matter insoluble in cold carbon bisulphide.

3. It must not have a viscosity of over 660 seconds per first 50 cm.³ at 90° C. (194° F.) or less than 480 seconds when the oil is to be applied before the 15th of October, or 540 seconds per first 50 cm.³ at 90° C. (194° F.) or less than 360 seconds if applied after the 15th of October and before the 1st of the following May. [The above test to be made with an Engler Viscosimeter

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using 240 cm.³ at 90° C. (194° F.). The value of the viscosimeter is 200 cm.³ of distilled water in 50.6 seconds at 20° C. (70° F.).]

4. It must not flash below 85° C. (185° F.) as determined by the Tagliabue Open Cup Tester.

5. It must not contain over one-tenth per cent. of water.

6. It must be free from coal tar or coal tar products.

7. When fifteen grams of the binder are heated to and maintained at a temperature of 162° C. (325° F.) in an open tin box two and one-quarter inches in diameter and one inch deep for a period of five hours, it must not lose in weight over twenty per cent. for the 660 viscosity oil or over twenty-five per cent. for the 540 viscosity oil, and yield a residue having the following characteristics:

a. It must have a specific gravity of not less than .995 at 15.5° C. (60° F.).

b. It must have a penetration of not less than 65 or over 115 at 77° F. as determined by the Dow Penetration Machine, using a No. 2 needle under a load of 100 grams applied for five seconds.

c. It must not contain over three per cent. of paraffin scale as determined by the Holde method.

When the binder is made from a fluxed natural asphalt, tests 2 and a are changed to read as follows:

2. It must not contain over five per cent. mineral and organic matter insoluble in cold carbon bisulphide.

a. It must have a specific gravity of not less than 1.02 at 15.5° C. (60° F.).

No oil is to be taken from any car until it has been sampled, analyzed and released by the State Road Department. The release will designate the actual quantity of asphaltum binder to be used to secure the specified quantity of residual bitumen.

The oil must be heated to a uniform temperature of not less than 90° C. (194° F.) before it is drawn from the car. The supervisor shall take the temperature as each wagonload of oil is drawn from the car, and if the temperature has fallen below 90° C. (194° F.) no more oil shall be taken from the car until the oil has been reheated to 90° C. (194° F.) or above.

OTHER METHODS OF CONSTRUCTION.

32. The contractor must furnish samples to the engineer of the kind of stone and asphaltum binder to be used in the work before the opening of the bids, and to the State Commissioner of Public Roads before the approval of the contract by him.

ENTRANCES TO DWELLINGS.

33. Driveways leading to dwellings located along the road, if indicated on the plans, shall be macadamized with the second course of broken stone (see Article 21) and finished in the same manner as prescribed for finishing macadam.

34. The macadamizing shall be carried to the lengths and widths as shown on plans, not exceeding, however, a distance of six (6) feet beyond the gutter line of the road, but in no case shall the macadamizing be carried beyond the side line of the road as indicated by the fences.

SHOULDERING.

35. A shoulder of firm earth or gravel is to be left or made on each side, extending at the same grade and curvature of road to side ditches or gutters. This shoulder is to be rolled according to the directions of the engineer.

SIDE DITCHES OR GUTTERS.

36. The side ditches or gutters are to be excavated as per stakes furnished by engineer, in order to give an easy flow of water, so that no water shall be left standing on the road or in the ditches, for which no extra payment will be made.

PAVED SIDE AND CROSS GUTTERS.

37. Gutters shall be paved with belgian blocks or cobble stones, as indicated, and for the lengths and widths as shown on plans.

BELGIAN BLOCKS.

38. If belgian blocks are used in paving gutters the contractor shall first excavate to a sufficient depth below the finished grade of the gutter to allow for a bed of good sharp sand or gravel of a depth not less than six (6) inches below the blocks. The cost of excavating this material and removing same must be included in the price bid for paving.

39. The blocks shall be laid vertically on edge and parallel with the line of the gutter. They shall be of the best quality of trap-rock and subject to the approval of the engineer and supervisor. Each block shall not measure less than eight (8) nor more than twelve (12) inches in length, not less than three and one-half ($3\frac{1}{2}$) nor more than four and one-half ($4\frac{1}{2}$) inches in width, and not less than seven (7) nor more than eight (8) inches in depth. All blocks shall be of the same quality as to hardness, color and grain. No out-crop, soft, brittle or laminated stone will be accepted. The blocks must be split and dressed so as to form, when laid, close end joints and side joints not exceeding one-half ($\frac{1}{2}$) inch in width, top and bottom, with fair and true surfaces on top, bottom and ends. All end joints must be broken by a lap of at least three (3) inches.

40. After the blocks are laid as above specified, the surface of the blocks must be covered with fine, dry sand, which shall be swept until the joints are completely filled. The blocks shall then be carefully rammed to a firm, unyielding bed with a uniform surface and with the proper grade and curvature. After ramming the blocks the surface of the same shall be again covered with fine, dry sand, and again swept until all the joints are filled.

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COBBLE STONES.

41. If cobble stones are used in paving gutters, the contractor shall proceed as provided for in Article 38.

42. The cobbles must be good, hard, sound stone and of as uniform size as practicable. Medium size stone not over five (5) inch face on its longest diameter must be used, excepting for center line and side lines of gutter, where eight (8) inch stone may be used. The stones are to be set upon their small ends with their greatest dimensions vertical and with their greatest horizontal dimensions parallel with the line of the gutter.

43. After the cobbles are laid as above specified, the same are to be covered with sand, rammed and again covered with sand, as provided for in Article 40. All stones broken in ramming shall be removed and replaced with perfect stones.

UNDERDRAINS.

44. Underdrains, as shown on plans, shall be constructed by the contractor of good four (4) inch round, porous tile. The top of the tile shall be at least thirty (30) inches deep, unless otherwise directed by the engineer, the joints shall be covered with salt hay, or material equally as good, and the trench filled with pervious earth. Additional underdrains, if found necessary, will be constructed as an extra, and will be governed by the provisions of Article 48.

45. When directed by the engineer, a stone drain may be used in place of the tile drain. A trench one foot wide and one foot six inches deep shall be excavated below the sub-grade, said excavation to be filled with loose broken stone to a depth required by the engineer.

BROAD TIRE WAGONS.

46. All wagons and carts used during the construction for hauling stone, earth or any other material must have tires not less than three and one-half ($3\frac{1}{2}$) inches in width.

NO EXTRA PRICE.

47. No allowance in measure of depth of pavement will be made on account of any material which may be driven into the road-bed by rolling. The pavement, when completed, must conform to the grade and the cross-sections, and be satisfactory to the engineer and the State Commissioner of Public Roads, whose decisions shall be final.

48. No extra work will be paid for unless the same, together with the price, has been agreed upon between the contracting parties, including the State Commissioner of Public Roads, and endorsed upon the agreement, witnessed by the engineer.

49. All gravel for shouldering or binder and all extra hauling shall be done at the contractor's expense.

SIXTEENTH ANNUAL REPORT.

BIDS.

50. Bids will only be received under these specifications for the completion of the entire work as called for in the estimate of quantities given below, including all the items as specified, and the total or lump sum of the bid will govern in the awarding of the contract. The contractor must give separate prices per unit of measure for each of the several classes of work to be performed and all bids should balance; that is to say, the total of the estimates given, multiplied by the prices per unit of measure, should equal the lump sum bid for the entire work. No bids will be received in which all of the following items are not filled out:

(1) Price per cubic yard for excavating, removing and depositing material, without classification and measured in excavation, as per cross-sections throughout the length of the road.

(2) Price per cubic yard for any necessary excavations and removing material, without classification and measured in excavation, not included in the length and width of the road.

(3) Price per square yard for macadam road complete.

(4) Price per square yard for macadamizing driveways to dwellings.

(5) Price per square yard for telford road complete.

(6) Price per square yard for laying belgian block gutters, furnishing all material and labor.

(7) Price per square yard for laying cobble stone gutters, furnishing all material and labor.

(8) Price per lineal foot for underdrains, furnishing all material and labor.

(9)

(10)

(11) Price per square yard for.....road complete.

(12) Price per square yard for.....road complete.

(13) Price per unit of measure for any additional work called for, furnishing all material and labor.

(14) Price (lump) for the whole road complete, according to above specifications and plans.

ESTIMATE OF QUANTITIES.

51.	(1)	Excavations.....	cubic yards.
	(2)	Excavations outside road.....	cubic yards.
	(3)	Macadam.....	square yards.
	(4)	Macadam driveways.....	square yards.
	(5)	Telford.....	square yards.
	(6)	Belgian block gutters.....	square yards.
	(7)	Cobble stone gutters.....	square yards.
	(8)	Underdrains.....	lineal feet.
	(9)	
	(10)	
	(11)	
	(12)	
	(13)	
	(14)	

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52. These quantities are the result of careful calculation, but are to be considered as approximate. The county will only pay the contractor for the actual amount of work performed, which will be determined after the completion of the contract, and at the price bid for the same. The Board of Chosen Freeholders reserves the right to increase or decrease any of the items in the above estimate of quantities, subject, however, to the provisions of Article 48. If there be any increase in the quantities as given, the county will pay for the same at the rate bid for the work in question. The contractor is expected to satisfy himself as to the nature, character and quantity of the material and labor required by a personal examination of the work contemplated.

CHECK ACCOMPANYING BIDS.

53. All bidders shall accompany their bid with a certified check, payable to the order of the Director of the Board of Chosen Freeholders, in the sum of one thousand dollars (\$1,000), as a guarantee that if the contract shall be awarded to him he will, when required by said board, execute an agreement in writing to perform the work according to the specifications. Upon failure by the contractor to enter into said agreement with the said Board of Chosen Freeholders, said certified check shall be forfeited and considered as liquidated damages.

LIABILITIES OF CONTRACTOR.

54. He shall maintain sufficient guards by day and night to prevent accidents from travel, and will be liable for any damage which may arise from his neglect to do so, or from any omission on his part.

55. He is to commence and prosecute the work upon the road at the end farthest from the source of supply of broken stone, unless otherwise ordered by the engineer, within.....days from and after the signing of the contract, and shall continue work thereon until completion, except as herein provided.

56. He further agrees to complete the same on or before the.....day of....., A. D..... Twenty dollars for each day that the work shall remain uncompleted, after the time allowed by contract, may be deducted, as liquidated damages, from any moneys due contractor, unless otherwise agreed upon by the Board of Chosen Freeholders, after presentation of certificate of the engineer recommending the extension of the time limit of completion.

57. The contractor shall keep the finished roadway, shoulders, side slopes, ditches and underdrains in repair for the period of one year from the date of its completion and acceptance, and, in addition thereto, for as much longer as for any period or periods during said year it shall be out of proper condition. If, during that time, the roadway or any part of the work shall, in the judgment of the engineer and the Board of Chosen Freeholders, require repairing, and they shall duly notify the contractor to make such repairs as required, and the contractor should refuse or neglect to do so to the satisfaction of the said engineer and the Board of Chosen Freeholders, within five days from the date of service of notice, then the said Board of Chosen Freeholders shall have the right to have the work done by other proper parties, and to deduct from any moneys due to said contractor an amount sufficient to cover the cost of

said repairs, and if there be no money due to said contractor, then the said Board of Chosen Freeholders shall have the right to maintain an action against the surety of said contractor for the recovery of the cost of said repairs.

58. The contractor will be required to preserve all stakes and bench-marks made and established on the line of work until duly authorized by the engineer to remove the same. All stakes or bench-marks disturbed or removed by the contractor or his agents without the permission of the engineer shall be replaced at the expense of the contractor.

59. The contractor shall not disturb the position of title stones (the corners of properties adjacent to the road), but where they appear he will either lift or lower them, under the personal supervision of the engineer.

60. The contractor must also preserve the roadway on which he is working from needless obstruction, and where necessary he must construct safe and commodious crossings, to be maintained in good order. He shall afford all proper and reasonable means for the accommodation of the public, and leave the roadway complete in every manner ready for immediate use.

61. All loss or damage arising from the nature of the work to be done or from any unforeseen or unusual obstruction or difficulty, which may be encountered in the prosecution of said work or from the action of the elements, shall be sustained by the contractor.

PROVISION FOR DRAINAGE.

62. If it is necessary in the prosecution of the work to interrupt or obstruct the natural drainage of the surface, or the flow of artificial drains, the contractor shall provide for the same during the progress of the work in such a way that no damage shall result to either public or private interests. He shall be held liable for all damages which may result from any neglect to provide for either natural or artificial drainage, which he may have interrupted.

RIGHT TO BUILD BRIDGES, CULVERTS, &C., AND SUSPENSION OF WORK.

63. The right of the county to build bridges, culverts, lay pipes or other appurtenances in said road during the progress and prior to the completion of the work is expressly reserved, as well as suspending the work or any part thereof during the construction of the same, for the purposes above stated, without further compensation to the contractor for such suspension than an extension of time for completing the work as much as it may have been delayed.

STOPPING WORK ON ACCOUNT OF WEATHER.

64. The State Commissioner of Public Roads, engineer or supervisor may stop any portion of the work, if, in their judgment, the weather is such as to prevent the same being done properly. No allowance of any kind will be made for such stoppage, except an extension of the time for the completion of the work as herein provided.

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ABANDONMENT OF CONTRACT.

65. If at any time the work under contract should be abandoned, or if at any time the engineer should judge and so certify in writing that said work, or any part thereof, is unnecessarily delayed, or that the contractor is willfully violating any of the conditions or covenants of this contract, or is executing the same in bad faith, then, in that case, the Board of Chosen Freeholders shall notify the said contractor to discontinue all work under this contract. Said board may employ other parties to complete the work in such manner as it may decide, and use such material as may be procured upon the line of aforesaid work, and, if necessary, procure other material for its completion, and charge the expense of the said labor and material to the contractor, which expense shall be deducted from any moneys due him under contract. In case these expenses shall exceed the sum which would have been payable under contract, if the same had been completed by said contractor, he or his bondsmen shall pay the amount of the excess to the Board of Chosen Freeholders, on notice from the engineer.

ENGINEER.

66. The engineer shall be selected or appointed by the Board of Chosen Freeholders and paid by it. He shall furnish all surveys, profiles, plans, specifications and estimates of quantities of all kinds before specifications are signed, and in such a clear manner that lump bids can be made upon the work. He shall furnish all lines and grades required for the completion of the work. He shall furnish estimates for quantities of work done before partial payments can be made, the quantity of road laid being determined by surface measurements. Should any difference arise between the contracting parties as to the meaning or intent of these specifications, his decisions on these matters are to be final and conclusive. The work is to be done according to his directions, and if any material of which he does not approve is brought upon the road, it is to be removed at the expense of the contractor. If the contractor fails or neglects to do any part of the work as specified or as directed by the engineer, then, in that case, all other work shall be discontinued on notice from the engineer to the contractor, or to the superintendent or foreman in charge of the work for the contractor, until such time as the work complained of has been done to the satisfaction of the engineer, and the contractor will not be entitled to or allowed any compensation or extension of time for such discontinuation or suspension of the work.

SUPERVISOR.

67. Nothing in these specifications relating to the duties of the engineer shall be taken or construed in any manner to conflict with the duties of the supervisor, as specifically set forth in the act entitled "An act to provide for the permanent improvement of public roads in this State," approved March 27th, 1905, but they shall co-operate as far as practicable.

INCOMPETENT WORKMEN.

68. The contractor shall employ competent men to do the work, and whenever the engineer and supervisor shall inform him, or his representative in charge, in writing, that any man on the work is unfitted for the place, or is working contrary to the provisions of the specifications or the instructions of the engineer and supervisor, he shall thereupon be discharged.

INSPECTION.

69. All directions and determinations necessary to give due and full effect to any of the provisions of these specifications shall be given by the engineer and supervisor.

70. All material and workmanship of any kind shall be subject at all times to the inspection of the engineer and supervisor. Whenever unfaithful and imperfect work is discovered, it shall be immediately repaired or replaced by the contractor, after due notification from the engineer and supervisor.

SUB-LETTING OF CONTRACT.

71. The contractor shall not assign or sub-let any portion of this contract without the consent of the Board of Chosen Freeholders and the State Commissioner of Public Roads.

PAYMENTS.

72. Monthly payments will be made by the Board of Chosen Freeholders to the contractor for work performed, upon presentation by him of the proper certificates of the engineer and supervisor, in a sum not to exceed eighty per cent. of the amount then due, together with releases from all liens, if required. Fifteen per cent. will be paid at the completion of the work and the acceptance of the same in writing by the Board of Chosen Freeholders and the State Commissioner of Public Roads. The remainder or five per cent. will be retained by the Board of Chosen Freeholders for a period of one year as security for the faithful performance of Article 57.

BOND OF CONTRACTOR.

73. The contractor will be required to execute, within thirty days of giving of contract, a bond in such sum and with such securities as shall be approved by the Board of Chosen Freeholders, conditioned for the faithful performance of the contract, to indemnify and save harmless the Board of Chosen Freeholders from all suits or actions of any name or description brought against it on account of any act or omission of the contractor or his agents, and for the faithful performance of the contract by the contractor. Said bond shall be in a sum of not less than the estimated cost of the road when completed. Any change made in the plans, specifications, agreements or quantities without the consent of the bondsmen shall in no way vitiate said bond. The contractor hereby further agrees that so much of the money due him, under and by virtue

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of this agreement, as shall be considered necessary by the Board of Chosen Freeholders, may be retained by it until all such suits or claims for damages aforesaid shall have been settled, and evidence to that effect furnished to the satisfaction of the Board of Chosen Freeholders.

CONTRACTOR TO INSURE PAYMENT FOR LABOR, MATERIAL, &C., ON FINAL
ESTIMATE.

74. The contractor must also furnish the engineer with satisfactory evidence that all persons who did work, or furnished material for this contract, or who have sustained damage or injury by reason of any act, omission or carelessness on his part or his agents in the prosecution of the work, have been duly paid or secured. He shall also give notice to the engineer within ten days after the completion of the work, and before final estimate is made, that any balance for such work or materials, or compensation for such damages due, has been fully paid or released.

75. The right is reserved to reject any or all bids, if deemed to the interest of the county or State.

.....
County Engineer.

Plans, including profiles, cross-sections and specifications, approved this
....., A. D., by resolution of
the Board of Chosen Freeholders of the county of.....

.....
Director of Board of Chosen Freeholders.

.....
Clerk of Board of Chosen Freeholders.

OFFICE STATE COMMISSIONER OF PUBLIC ROADS, TRENTON, N. J.

I have this day carefully read and examined the foregoing specifications, and the plans, profiles and cross-sections therein referred to, and the same are hereby approved.

Any departure from these specifications must have the written consent of the State Commissioner of Public Roads.

Given under my hand this....., A. D. 19..

.....
State Commissioner of Public Roads.

PROPOSAL.

To the Board of Chosen Freeholders, County of.....and State of New Jersey:

GENTLEMEN—The undersigned hereby declare....that....he....ha....carefully examined the annexed specifications and the drawings therein referred to, and will provide all necessary machinery, tools, apparatus and other means of construction, and do all the work and furnish all the material called for by said specifications in the manner prescribed by the specifications and the requirements of the engineer and supervisor under them, for the following prices:

1. For excavating and removing material without classification and measured in excavation, as per cross-sections, throughout the length of the road..... cubic yards, at.....cents, \$.....

2. Price per cubic yard for any necessary excavations and removing material without classification and measured in excavation, not included in the length and width of the road.....cubic yards, at.....cents, \$.....

3. For furnishing all material and labor for macadamizing roadway and driveways, including application of asphaltum binder.

Macadam.....square yards, at.....cents, \$.....

4. Macadam for driveways.....square yards, at.....cents, \$.....

5. Telford.....square yards, at.....cents, \$.....

6. For paving gutters, furnishing all material and labor:

(1) Belgian block gutters.....square yards, at.....cents, \$.....

(2) Cobble stone gutters.....square yards, at.....cents, \$.....

7. For underdraining, furnishing all

material and labor.....lineal feet, at.....cents, \$.....

8., at.....cents, \$.....

9., at.....cents, \$.....

10., at.....cents, \$.....

11., at.....cents, \$.....

12., at.....cents, \$.....

13., at.....cents, \$.....

14. Price (lump) for the whole road complete, according to the specifications and plans therein referred to.....

Accompanying this proposal is a certified check for the sum of one thousand dollars (\$1,000), payable to the order of the Director of the Board of Chosen Freeholders of.....county, which check is to be forfeited as liquidated damages if, in case this proposal is accepted, the undersigned shall fail to execute a contract with said Board of Chosen Freeholders, under the conditions of this proposal, within the time provided for by the foregoing advertisement for proposals, otherwise said check is to be returned to the undersigned.

Signed :.....

Address.....

.....

NOTE.—Opposite items where no quantities are specified, the contractor will name price per unit of measure for each class of work called for, but will not include same in his total column.

COMMISSIONER OF PUBLIC ROADS.

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CONTRACT.

This agreement, made the.....day of....., in the year of our Lord one thousand nine hundred....., between THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF....., party of the first part, and , party of the second part,

Witnesseth, That the said party of the second part, for and in consideration of the payments hereinafter specified and agreed to be made by the party of the first part, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor required to be furnished and delivered, done and performed in and about the improving of..... beginning at.....and extending to.....in the township of..... a distance of.....in strict and entire conformity with the plans on file in the engineer's office and with the specifications hereto annexed and duly approved by resolution of THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF.....adopted the.....day of.....in the year of our Lord one thousand nine hundred.....and approved by the State Commissioner of Public Roads on the.....day of.....in the year of our Lord one thousand nine hundred.....which said plans and specifications are hereby made part of this agreement as fully and with the same effect as if the same had been set forth at length in the body of this agreement.

In consideration of the premises the party of the first part hereby agrees to pay to the party of the second part for said work, when completed in accordance with the said specifications, the sum of.....payments to be made as provided in said specifications upon presentation of the proper certificates of the engineer and supervisor and upon the terms set forth in the annexed specifications.

This contract to be binding upon THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF....., its successors or assigns, and upon.....the party of the second part.

In Witness Whereof, THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF.....has caused this instrument to be signed by its director, attested by its clerk and its corporate seal to be hereunto affixed, pursuant to a resolution of said Board passed for that purpose, and the said party of the second part ha....hereunto set.....hand....and seal....the day and year first above written.

[SEAL.]

.....
*Director of the Board of Chosen Free-
holders of the County of*

Attest:

.....
Clerk.
.....
.....
.....

Signed, sealed and delivered in the presence of

.....

This contract approved this.....day of....., 19..

.....
State Commissioner of Public Roads.

KNOW ALL MEN BY THESE PRESENTS, That we.....
.....and.....of the county of.....
and State of New Jersey, are held and firmly bound unto THE BOARD OF CHOSEN
FREEHOLDERS OF THE COUNTY OF....., in the sum of.....dollars,
lawful money of the United States, to be paid to the said THE BOARD OF CHOSEN
FREEHOLDERS OF THE COUNTY OF....., its successors or assigns, to which
payment well and truly to be made, we bind ourselves, our heirs, executors and
administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated this.....day of....., A. D. nine-
teen hundred and.....

The Condition of this Obligation is such, That if the above bounden.....
shall well and truly perform his part of the contract hereto annexed, and all
the covenants and conditions therein perform, then this obligation to be void,
otherwise to remain in full force and virtue.

.....
.....
.....
.....
.....

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

.....

This Bond approved this.....day of.....A. D. 19..

.....
Director.

Be it Remembered, on this.....day of.....in the year of our Lord
one thousand nine hundred and.....before me, a Master in Chancery of
the State of New Jersey, personally appeared.....and.....who
acknowledged that they signed, sealed and delivered the foregoing bond as their
voluntary act and deed for the uses and purposes therein expressed.

.....

COMMISSIONER OF PUBLIC ROADS.

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JUSTIFICATION OF SURETY.

STATE OF NEW JERSEY, }
COUNTY OF..... } ss.

On this.....day of....., A. D. 19.., before me, a Notary Public in and for the county and State aforesaid, personally appeared.....who, being duly sworn, on his oath declares that he is a resident of the county of, in the State of New Jersey; that he is a freeholder in said county, and that he owns real estate in said county, in his own right, to the amount ofover and above all his indebtedness and after all his debts are paid, and over any contingent liability by reason of being bail, surety, endorser or guarantor.

Subscribed and sworn to before me this.....day of....., A. D. 19... I hereby certify that the contents of the above have been carefully made known to affiant before execution.

STATE OF NEW JERSEY, }
COUNTY OF..... } ss.

On this.....day of....., A. D. 19.., before me, a Notary Public in and for the county and State aforesaid, personally appeared.....who, being duly sworn, on his oath declares that he is a resident of the county of, in the State of New Jersey; that he is a freeholder in said county, and that he owns real estate in said county, in his own right, to the amount ofover and above all his indebtedness and after all his debts are paid, and over any contingent liability by reason of being bail, surety, endorser or guarantor.

Subscribed and sworn to before me this.....day of....., A. D. 19... I hereby certify that the contents of the above have been carefully made known to affiant before execution.

STANDARD STATE AID SPECIFICATIONS FOR GRAVEL ROADS.

SPECIFICATIONS

FOR A GRAVEL ROAD IN.....COUNTY, NEW
JERSEY, KNOWN AS.....
BEGINNING AT.....AND
EXTENDING TO.....
A DISTANCE OF.....FEET, OR.....MILES.
GRAVEL.....FEET WIDE.....INCHES DEEP.
SHOULDERS.....FEET WIDE. TOTAL WIDTH OF ROAD.....FEET.

WORK TO BE PERFORMED.

1. The work to be performed will consist in furnishing all materials, tools, machinery and labor necessary for the efficient and proper grading of roadway, side ditches and side banks, laying, spreading and rolling of road material, and leaving the roadway complete in every manner ready for immediate use.

PLANS AND DRAWINGS.

2. The plan, profile and cross-sections on file in the office of the State Commissioner of Public Roads and at the office of.....
County Engineer.....New Jersey, show general location, profile, details and dimensions. The work will be constructed in all respects according to the above-mentioned plan, profile and cross-sections, which form part of these specifications.

3. Any variation of location, profile, size and dimensions from that shown on the plan, as may be required by the exigencies of construction, will, in all cases, be determined by the engineer, but the contractor shall not, on any pretense, save that of the written order of the contracting parties and the State Commissioner of Public Roads, deviate from the intent of the plan or specifications.

4. On all drawings, figured dimensions are to govern in cases of discrepancy between scale and figures.

COMMISSIONER OF PUBLIC ROADS.

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GRADING.

5. Under this head will be included all excavations and embankments required for the formation of the highway, cutting all ditches or drains about or contiguous to the road, removing all fences, walls, buildings, trees, poles or other encumbrances, the excavation and embankment necessary for reconstructing cross or branch roads or entrances to dwellings in cases where they are destroyed or interfered with in the formation of the roadway, and all other excavations and embankments connected with or incidental to the construction of the said road.

EXCAVATION.

6. The roadway to the width of.....feet must be excavated or built to the same curvature as shown on plans.

7. The material taken from any cut or ditch shall be deposited where the engineer may direct, either within or without the lines of the road, but no material shall be removed from the line of the road without the order of the engineer.

EMBANKMENT.

8. Material taken from the excavations, except when otherwise directed by the engineer, shall be deposited in the embankments, either on the roadway or sidewalks.

9. When there is not sufficient material in the excavations of the road to form the embankments, the deficiency must be supplied by the contractor from without the road. The character of said material and place of excavation must be approved by the engineer.

10. The embankments must be formed in layers of such depth, generally twelve (12) inches, and the material deposited and distributed in such manner as the engineer may direct, the required allowance for settling being added. Each layer must be carried across the entire width of the embankment and completed before commencing another, and this method shall be followed with each succeeding layer until the established grade is reached.

SLOPES.

11. Slopes in both embankment and excavation shall be one and one-half ($1\frac{1}{2}$) horizontal to one (1) vertical, when the width of the road will permit; if the road is too narrow to allow the full slope within its side lines, the engineer shall not calculate the quantities, either in embankment or excavation, beyond said side lines, unless the required ground shall be first dedicated to the public in writing by the owner or owners thereof.

ROADWAY.

Sub-Foundations.

12. When the excavations and embankments have been brought to a proper depth below the intended surface of the roadway, the cross-section conforming in every respect to the cross-section of the road as shown on plans, the same shall, if ordered by the engineer, be rolled until approved by him. If any depressions form under such rolling, owing to improper material or vegetable matter, the same shall be removed and good earth substituted, and the whole re-rolled until thoroughly solid and to above-mentioned grade.

SHOULDERING.

13. A shoulder of firm earth or gravel is to be left or made on each side of the gravel-bed, extending at the same grade and curvature of road to side ditches or gutters. This shoulder is to be rolled according to the directions of the engineer.

UNDERDRAINS.

14. Underdrains, if found necessary, shall be constructed by the contractor (at prices named in bids) of good.....inch..... tile, laid upon a board of not less than one (1) inch in thickness and six (6) inches in width, whenever and wherever the engineer shall decide; top of tile or pipe must be at least.....inches deep, unless otherwise directed by the engineer; the joints of the tile or pipe must be covered with salt hay, or material equally as good, and trench filled with pervious earth.

15. When directed by the engineer a stone drain may be used in place of the tile drains. A trench one foot in width and one foot six inches in depth shall be excavated below the subgrade, said excavation to be filled with loose broken stone to a depth required by the engineer.

MATERIALS.

16. The material to be used in surfacing the road is to be furnished by the contractor.

17. The engineer and State Commissioner of Public Roads will pass upon and approve all gravel to be used in surfacing the road. The contractor is to dig, cart and place upon the road, in accordance with the specifications, the gravel selected and use no other. Should any objectionable material be used, he is to remove the same at his own expense.

18. The contractor must furnish to the engineer and State Commissioner of Public Roads samples of the kind of gravel to be used in the work before the opening of the bids.

19. The gravel is to be placed upon the road in such manner as shall be approved by the engineer, and be thoroughly rolled and solidified until it is consolidated, firm, and approved by the engineer. The gravel shall be of such thickness that when it is thoroughly compacted and approved, it shall be..... inches deep in the center and slope at a regular grade to.....inches in depth at a distance of.....feet on each side of the center line.

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20. Should any depressions appear these are to be carefully filled with gravel, so that the finished road will conform to the approved profile.

21. The contractor is to be paid by the cubic yard, as per depths above named, for the compacted gravel that he puts on the road, at the price named in the accepted bid, which shall include finishing the road and shaping the shoulders as above specified.

22. The contractor is to place sufficient gravel on the road to allow it to shrink thirty-three per cent. in rolling and settling.

SIDEWALKS.

23. The contractor will also be required, when the engineer so directs, to grub and remove from a strip of land.....feet on outside of curb-lines all material objectionable to the engineer, such as trees, stumps, roots and brush, and refill the holes with earth, thereby completing the opening of the entire road to a width of.....feet, which shall be.....feet on each side of the center line.

24. The grubbing and removing of such objectionable material that is ordered by the engineer shall be styled as "grubbing," and paid for by the acre at price named in accepted bid.

OPEN DITCHES.

25. The contractor is to grade the shoulders and open all necessary side ditches (as per stakes furnished by the engineer) so that there will be no water allowed to stand by the side of the road or upon it, for which no extra payment will be allowed.

EXTRA DEEP.

26. Should the engineer and State Commissioner of Public Roads so order, the contractor is to build in all respects, as already specified, the gravel-bed to a greater depth or thickness than that already named. The contractor is to do the same at a price named per square yard for each extra inch in depth.

NO EXTRA PRICE.

27. No allowance in measure of depth of pavement will be made on account of any material which may be driven into the roadbed by rolling. The pavement, when completed, must conform to the grade and cross-section and be satisfactory to the engineer and State Commissioner of Public Roads, whose decision shall be final.

28. No extra work will be paid for unless the price has been agreed upon between the contracting parties, including the State Commissioner of Public Roads, and endorsed upon the agreement, witnessed by the engineer.

BROAD-TIRE WAGONS.

29. All wagons and carts used during the construction, for hauling stone, earth or any other material must have tires not less than three and one-half ($3\frac{1}{2}$) inches in width.

BIDS.

30. Bids will be received under these specifications for the road complete as follows:

(1) Price per cubic yard for excavation, without classification, as per plans and cross-sections throughout the length and width of the road.

(2) Price per acre for grubbing and removing objectionable material from sidewalks.

(3) Price per lineal foot for completed tile drain.

(4) Price per cubic yard for compacted gravel as specified.

(5) Price per square yard for each ordered inch in depth in excess of thickness named.

(6) Price (lump) for the whole road complete, according to the specifications and plans prepared by the engineer.

No bid will be received in which all the above items are not filled out.

ESTIMATE OF QUANTITIES.

31. (1) Excavation.....cubic yards.

(2) Grubbingacres.

(3) Tile drain.....lineal feet.

(4) Compacted gravel.....cubic yards.

32. These quantities are the result of calculation, but are to be considered as approximate. The county will not be responsible for any excess in above quantities, should any occur. The contractor is expected to satisfy himself by a personal examination of the work contemplated, about the nature, character and quantity of the labor and material required.

CHECK ACCOMPANYING BIDS.

33. Bids shall be accompanied with a certified check, payable to the Director of the Board of Chosen Freeholders, for the sum of one thousand dollars (\$1,000), as a guarantee that if the contract shall be awarded to him he will, when required by said board, execute an agreement in writing to perform the work according to the specifications, and upon failure by the contractor to enter into said agreement with the said Board of Chosen Freeholders, said certified check shall be forfeited and considered as liquidated damages.

LIABILITIES OF CONTRACTOR.

34. He shall keep up sufficient guards by day and night to prevent accidents from travel, and will be liable for any damage which may arise from his neglect to do so, or from any omission on his part.

35. He is to commence and prosecute the work upon the road at such points as may be directed by the engineer, within.....days from and after the signing of the contract, and shall continue work thereon until completion, except as herein provided.

36. He further agrees to complete the same on or before the..... day of....., A. D.

COMMISSIONER OF PUBLIC ROADS.

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37. Twenty dollars for each day that the work shall remain uncompleted, after the time allowed by contract, may be deducted, as liquidated damages, from any moneys due contractor, unless otherwise agreed upon by the Board of Chosen Freeholders, after presentation of certificate of the engineer recommending the extension of the time limit of completion.

38. The contractor shall keep the finished roadway, earthwork, side ditches and underdrains in repair for the period of one year from the date of its completion and acceptance, and, in addition thereto, for as much longer as for any period or periods during said year it shall be out of proper condition. If, during that time, the roadway or any part of the work shall, in the judgment of the engineer and the Board of Chosen Freeholders, require repairing, and they shall duly notify the contractor to make such repairs as required, and the contractor should refuse or neglect to do so to the satisfaction of the said engineer and Board of Chosen Freeholders, within five days from the date of service of notice, then the said engineer and Board of Chosen Freeholders shall have the right to have the work done properly by other parties and recover the cost for the same from the said contractor or his surety.

39. The contractor will be required to preserve all stakes and bench-marks made and established on the line of work until duly authorized by the engineer to remove the same.

40. The contractor shall not disturb the position of title-stones (the corners of properties adjacent to the road), but where they appear he will either lift or lower them, under the personal supervision of the engineer.

41. The contractor must also preserve the roadway on which he is working from needless obstruction, and where necessary construct safe and commodious crossings, to be maintained in good order. He shall afford all proper and reasonable means for the accommodation of the public, and leave the roadway complete in every manner ready for immediate use.

42. All loss or damage arising from the nature of the work to be done, or from any unforeseen or unusual obstruction, or difficulty, which may be encountered in the prosecution of said work, or from the action of the elements, shall be sustained by the contractor.

PROVISION FOR DRAINAGE.

43. If it is necessary in the prosecution of the work to interrupt or obstruct the natural drainage of the surface, or the flow of artificial drains, the contractor shall provide for the same during the progress of the work in such a way that no damage shall result to either public or private interests. He shall be held liable for all damages which may result from any neglect to provide for either natural or artificial drainage, which he may have interrupted.

RIGHT TO BUILD BRIDGES, CULVERTS, ETC., AND SUSPENSION OF WORK.

44. The right of the county to build bridges, culverts, lay pipes or other appurtenances in said road during the progress of the work, is expressly reserved, as well as suspending the work, or any part thereof, during the construction of the same, for the purposes above stated, without further compensation to the contractor for such suspension than an extension of time for completing the work as much as it may have been delayed.

STOPPING THE WORK ON ACCOUNT OF WEATHER.

45. The State Commissioner of Public Roads, engineer or supervisor may stop any portion of the work if, in their judgment, the weather is such as to prevent the same being done properly. No allowance of any kind will be made for such stoppage, except an extension of the time for the completion of the work as herein provided.

ABANDONMENT OF CONTRACT.

46. If at any time the work under contract should be abandoned, or if at any time the engineer should judge and so certify in writing that said work, or any part thereof, is unnecessarily delayed, or that the contractor is willfully violating any of the conditions or covenants of this contract, or is executing the same in bad faith, then, and in that case, the Board of Chosen Freeholders shall notify the said contractor to discontinue all work under this contract. It may employ other parties to complete the work in such a manner as it may decide, and use such material as may be procured upon the line of aforesaid work, and, if necessary, to procure other material for its completion, and charge the expense of the said labor and material to the contractor, which expense shall be deducted from any moneys due him under contract. In case these expenses shall exceed the sum which would have been payable under contract, if the same had been completed by said contractor, he or his bondsmen shall pay the amount of the excess to the Board of Chosen Freeholders, on notice from the engineer.

ENGINEER.

47. The engineer shall be selected or appointed by the Board of Chosen Freeholders and paid by it. He shall furnish all surveys, profiles, plans, specifications and estimates of quantities of all kinds before specifications are signed, and in such a clear manner that lump bids can be made upon the work. He shall furnish all lines and grades required for the completion of the work. He shall furnish estimates for quantities of work done before partial payments can be made, the quantity of road laid being determined by surface measurements. Should any difference arise between the contracting parties as to the meaning or intent of these specifications, his decisions on these matters are to be final and conclusive. The work is to be done according to his directions, and if any material of which he does not approve is brought upon the road, it is to be removed at the expense of the contractor. If the contractor fails or neglects to do any part of the work as specified or as directed by the engineer, then, in that case, all other work shall be discontinued, on notice from the engineer to the contractor, or to the superintendent or foreman in charge of the work for the contractor, until such time as the work complained of has been done to the satisfaction of the engineer, and the contractor will not be entitled to or allowed any compensation or extension of time for such discontinuation or suspension of the work.

COMMISSIONER OF PUBLIC ROADS.

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SUPERVISOR.

48. Nothing in these specifications relating to the duties of the engineer shall be taken or construed in any manner to conflict with the duties of the supervisor, as specifically set forth in the act entitled "An act to provide for the permanent improvement of public roads in this State," approved March 27th, 1905, but they shall co-operate as far as practicable.

INCOMPETENT WORKMEN.

49. The contractor shall employ competent men to do the work, and whenever the engineer and supervisor shall inform him, or his representative in charge, in writing, that any man on the work is unfitted for the place, or is working contrary to the provisions of the specifications or the instructions of the engineer and supervisor, he shall thereupon be discharged.

INSPECTION.

50. All directions and determinations necessary to give due and full effect to any of the provisions of these specifications shall be given by the engineer and supervisor.

51. All material and workmanship of any kind shall be subject at all times to the inspection of the engineer and supervisor. Whenever unfaithful and imperfect work is discovered, it shall be immediately repaired or replaced by the contractor, after due notification from the engineer and supervisor.

SUB-LETTING OF CONTRACT.

52. The contractor shall not assign or sub-let any portion of this contract without the consent of the Board of Chosen Freeholders and the State Commissioner of Public Roads.

PAYMENTS.

53.monthly payments will be made by the Board of Chosen Freeholders to the contractor for work performed, upon presentation by him of the proper certificates of the engineer and supervisor, in a sum not to exceed eighty per cent. of the amount then due, together with releases from all liens, if required. Fifteen per cent. will be paid at the completion of the work and the acceptance of the same in writing by the Board of Chosen Freeholders and the State Commissioner of Public Roads. The remainder, or five per cent., will be retained by the Board of Chosen Freeholders for a period of one year as security for the faithful performance of Article 38.

BOND OF CONTRACTOR.

54. The contractor will be required to execute, within thirty days of giving of contract, a bond in such sum and with such securities as shall be approved by the Board of Chosen Freeholders, conditioned for the faithful performance

of the contract, to indemnify and save harmless the said Board of Chosen Freeholders from all suits or actions of any name or description brought against it on account of any act or omission of the contractor or his agents, and for the faithful performance of the contract by the contractor. Said bond shall be in a sum of not less than the estimated cost of the road when completed. Any change made in said plans, specifications, agreements or quantities without the consent of the bondsmen shall in no way vitiate said bond. The said contractor hereby further agrees that so much of the money due him, under and by virtue of this agreement, as shall be considered necessary by the Board of Chosen Freeholders, may be retained by it until all such suits or claims for damages aforesaid shall have been settled, and evidence to that effect furnished to the satisfaction of the said Board of Chosen Freeholders.

CONTRACTOR TO INSURE PAYMENT FOR LABOR, MATERIAL, ETC., ON FINAL
ESTIMATE.

55. The contractor must also furnish said engineer with satisfactory evidence that all persons who did work, or furnished material for this contract, or who have sustained damage or injury by reason of any act, omission or carelessness on his part or his agents in the prosecution of the work, have been duly paid or secured; he shall also give notice to said engineer within ten days after the completion of the work, and before final estimate is made, that any balance for such work or materials, or compensation for such damages due, has been fully paid or released.

56. The right is reserved to reject any or all bids, if deemed to the interest of the county or State.

.....
County Engineer.

Approved this.....day of....., A. D. 19.., by resolution of the
Board of Chosen Freeholders of the county of.....

.....
Director of Board of Chosen Freeholders.

.....
Clerk of, Board of Chosen Freeholders.

OFFICE STATE COMMISSIONER OF PUBLIC ROADS, TRENTON, N. J.

I have this day carefully read and examined the foregoing specifications, and the plans, profiles and cross-sections therein referred to, and the same are hereby approved.

Any departure from these specifications must have the written consent of the State Commissioner of Public Roads.

Given under my hand, this.....day of....., A. D. 19...

.....
State Commissioner of Public Roads.

COMMISSIONER OF PUBLIC ROADS.

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PROPOSAL.

To the Board of Chosen Freeholders, County of.....and State of New Jersey:

GENTLEMEN—The undersigned hereby declare... that...he...ha... carefully examined the annexed specifications and the drawings therein referred to, and will provide all necessary machinery, tools, apparatus and other means of construction, and do all the work and furnish all the material called for by said specifications in the manner prescribed by the specifications and the requirements of the engineer and supervisor under them, for the following prices:

- (1) Price per cubic yard for excavation, without classification, as per plans and cross-sections throughout the length and width of the roadper cubic yard.
- (2) Price per acre for grubbing and removing objectionable material from sidewalks.....per acre.
- (3) Price per lineal foot for completed tile drain.....per lineal foot.
- (4) Price per cubic yard for compacted gravel as specified.....per cubic yard.
- (5) Price per square yard for each ordered inch in depth in excess of thickness named.....per square yard.
- (6) Price (lump) for the whole road complete, according to the specifications and plans prepared by the engineer.....

Accompanying this proposal is a certified check for the sum of one thousand dollars (\$1,000), payable to the order of the Director of the Board of Chosen Freeholders of.....county, which check is to be forfeited as liquidated damages if, in case this proposal is accepted, the undersigned shall fail to execute a contract with said Board of Chosen Freeholders, under the conditions of this proposal, within the time provided for by the foregoing advertisement for proposals; otherwise, said check is to be returned to the undersigned.

Signed.....

Address.....

.....N. J.,

CONTRACT.

This agreement, made the.....day of....., in the year of our Lord one thousand nine hundred....., between THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF....., party of the first part, and....., party of the second part.

Witnesseth, That the said party of the second part, for and in consideration of the payments hereinafter specified and agreed to be made by the party of the first part, hereby covenant and agree to furnish and deliver all the materials and to do and perform all the work and labor required to be furnished and delivered, done and performed in and about the graveling of.....beginning at.....and extending to....., in the township of....., a distance of....., in strict and entire conformity with the plans on file in the engineer's office and with the specifications hereto annexed and duly approved by

resolution of THE BOARD OF CHOSEN FREEHOLDERS OF THE COUNTY OF.....
adopted the.....day of....., in the year of our Lord one thousand nine
hundred....., and approved by the State Commissioner of Public Roads,
on the.....day of.....in the year of our Lord one thousand nine hun-
dred.....which said plans and specifications are hereby made part of this
agreement as fully and with the same effect as if the same had been set forth
at length in the body of this agreement.

In consideration of the premises the party of the first part hereby agrees
to pay to the party of the second part for said work, when completed in
accordance with the said specifications, the sum of.....payments to be
made as provided in said specifications upon presentation of the proper certifi-
cates of the engineer and supervisor and upon the terms set forth in the an-
nexed specifications.

This contract to be binding upon THE BOARD OF CHOSEN FREEHOLDERS OF
THE COUNTY OF....., its successors and assigns, and upon.....the
party of the second part.....

In Witness Whereof, The director of THE BOARD OF CHOSEN FREEHOLDERS
OF THE COUNTY OF....., by authority of a resolution of said board, hath
hereunto set his hand and affixed the corporate seal of the said board and the
said party of the second part ha.. hereunto set hand.. and seal.. the
day and year first above written.

.....
*Director of the Board of Chosen Free-
holders of the County of.....*

Attest:

.....
Clerk.
.....
.....
.....

Signed, sealed and delivered in the presence of
.....

This contract approved this.....day of....., 19..

.....
State Commissioner of Public Roads.

KNOW ALL MEN BY THESE PRESENTS. That we.....
.....and.....of the county of.....
and State of New Jersey, are held and firmly bound unto THE BOARD OF
CHOSEN FREEHOLDERS OF THE COUNTY OF....., in the sum of.....
dollars, lawful money of the United States, to be paid to the said THE BOARD
OF CHOSEN FREEHOLDERS OF THE COUNTY OF....., its successors or
assigns, to which payment well and truly to be made, we bind ourselves, our

COMMISSIONER OF PUBLIC ROADS.

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heirs, executors and administrators, jointly and severally, firmly by these presents.

Sealed with our seals and dated this.....day of....., A. D. nineteen hundred and.....

The Condition of this Obligation is such, That if the above bounden..... shall well and truly perform his part of the contract hereto annexed, and all the covenants and conditions therein perform, then this obligation to be void, otherwise to remain in full force and virtue.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

This Bond approved this.....day of....., A. D. 19..

Director.

Be it Remembered on this.....day of....., in the year of our Lord one thousand nine hundred and....., before me, a Master in Chancery of the State of New Jersey, personally appeared.....and..... who acknowledged that they signed, sealed and delivered the foregoing bond as their voluntary act and deed for the uses and purposes therein expressed.

JUSTIFICATION OF SURETY.

STATE OF NEW JERSEY, }
COUNTY OF..... } ss.

On this.....day of....., A. D. 19.., before me, a Notary Public in and for the county and State aforesaid, personally appeared.....who being duly sworn, on his oath declares that he is a resident of the county of....., in the State of New Jersey; that he is a freeholder in said county, and that he owns real estate in said county, in his own right, to the amount of.....over and above all his indebtedness and after all his debts are paid, and over any contingent liability by reason of being bail, surety, endorser or guarantor.

Subscribed and sworn to before me, this.....day of....., A. D. 19..
I hereby certify that the contents of the above have been carefully made known to affiant before execution.

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STATE OF NEW JERSEY, }
COUNTY OF..... } ss.

On this.....day of....., A. D. 19.., before me, a Notary Public in and for the county and State aforesaid, personally appeared.....who, being duly sworn, on his oath declares that he is a resident of the county of....., in the State of New Jersey; that he is a freeholder in said county, and that he owns real estate in said county, in his own right, to the amount of..... over and above all his indebtedness and after all his debts are paid, and over any contingent liability by reason of being bail, surety, endorser or guarantor.

Subscribed and sworn to before me, this.....day of....., A. D. 19..
I hereby certify that the contents of the above have been carefully made known to affiant before execution.

.....

Appendix B.

CHAPTER 58.

An act to provide for the permanent improvement of public roads in this State (Revision of 1905). With amendments of 1906 and 1909.

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 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 their counties. 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 municipality through which said road runs shall pay ten per centum of the cost

Improve-
ments of
roads by
freeholders.

Selection of
roads.

Township
assistance.

of said improvement, said payment to be applied to the improvement of roads constructed under this act.

Survey
made.

2. The said board, after the 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 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, and 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 one-third of the cost of the construction of said road, together with one-third of the cost of 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 four hundred thousand dollars, or such sum as shall in each year be appropriated for that purpose, then he shall approve said plans, cross-sections and specifications, otherwise he shall reject the same.

Approval by
board and
commissioner.

Limit of
State ex-
penditure.

Proposals
invited.

3. Within thirty days after approval of the plans, cross-sections and specifications by the Commissioner of Public Roads, it shall be the duty of the board of chosen freeholders to advertise for bids for said work in two or more of the public papers printed in said county, and in at least one engineering journal published in the city of

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New York, for three weeks successively, at least once in each week. 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 director of the board of chosen freeholders, for one thousand dollars, as a guarantee that if said work is 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, 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, 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 readvertising 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, and at least five per centum of the contract price shall not be paid to the contractor until after the expiration of one

Bidder's
guarantee.

Contract.

Approved
by com-
missioner.May reject
contract.

Proviso.

As to pay-
ment under
contract.

year from the completion of the work and acceptance thereof in writing by the Commissioner of Public Roads.

Excess over contract allowable.

4. 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) one-fifth of one per centum of the ratables of the county, as reported to the State Comptroller for the preceding year, exclusive of the State appropriation for road purposes apportioned to any county.

Copy of specifications, &c., filed with commissioner.

5. A true copy of the specifications, bid, contract, bond and justification of surety, 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 Commissioner of Public Roads, to be filed and remain of record in the office of such commissioner.

Supervisor appointed by commissioner.

6. Immediately after the awarding of any contract under the provisions of this act, the State Commissioner of Public Roads shall appoint a competent supervisor to take charge of the work required to be performed under said contract, who shall receive for his services the sum of three dollars per day, to be paid to the said supervisor, out of the sum hereinafter appropriated for the one-third of the cost of all roads constructed under this act, on the approval of the State Commissioner of Public Roads. Such supervisor, before assuming the duties of his office, shall make and subscribe an oath or affirmation, before any officer authorized to administer the same, that he will faithfully, and to the best of his ability and understanding, perform all the duties of his office. The State Commissioner of Public Roads may, however, summarily discharge any supervisor and may appoint a new supervisor in the place of the one so discharged. Where any contract provides for partial payments based upon the amount of work done, it shall be the duty of the supervisor, as each payment becomes due, to present to the board of chosen freeholders a certificate, signed by such

Per diem.

Oath.

May be summarily dismissed.

Certificate of partial payments.

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supervisor and the 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 contract, plans and specifications. When the work done under any contract shall have been fully completed, the supervisor 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.

Final statement on completion of contract.

7. One-third of the cost of all roads constructed under this act, not exceeding in any one year the sum of four hundred thousand dollars, shall be paid out of the State treasury, out of any moneys not otherwise appropriated, if the same be first appropriated in the annual appropriation act. The Governor and State Commissioner of Public Roads shall certify from time to time to the State Comptroller the amount 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.

State appropriation.

Payments to various municipalities.

8. On or before the day fixed by law for the meeting of the county board of assessors in any county in each year, the board of chosen freeholders of such county shall certify to the said county board of assessors, either in the annual tax budget or separately, two-thirds of the estimated cost of all work contracted for under the provisions of this act since the day fixed by law for the meeting of the board of assessors in the year next preceding. The county board of assessors shall include in their assessment of county taxes the sum so certified, and the same shall be collected and paid over to the county in the same manner and at the same time that other county taxes are collected and paid over; if a deficiency shall exist, in

Notice to county board of assessors.

Assessment and collection of road moneys.

If deficiency.

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consequence of the cost exceeding the estimate, or in consequence of the receipt of less than one-third of the cost from the State, the board of chosen freeholders shall have authority to borrow, on temporary loans, such deficiency, and the said board shall certify to the county board of assessors the total amount of such deficiency, which shall be included in the next annual tax levy, and shall be assessed, collected and paid over as other taxes are assessed, collected and paid over. If there be a surplus, by reason of the estimate exceeding the cost, the same shall be retained and used in the construction of other roads under this act, or in repairs to roads constructed under this act.

If surplus.

Bonds instead of tax.

Amount, rate, time.

9. The board of chosen freeholders may, instead of certifying to the county board of assessors the two-thirds cost of any work done under this act, as required by the eighth 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 two-thirds of the estimated cost of said work. These bonds shall be designated as "road improvement bonds," and shall be for such sums and in such amounts, payable in not less than six nor more than thirty years from date thereof, with interest at a rate not exceeding five per centum per annum, payable annually or semi-annually, as said board of chosen freeholders, by said resolution, may determine. The said bonds shall be signed by the director of the board of chosen freeholders and by the county collector, sealed with the seal of the board, properly numbered, and a registry thereof kept by the board, and may be either coupon or registered bonds; if coupon bonds, the coupons shall be signed by the director of the board, and shall be numbered to correspond to the several bonds to which they shall be severally attached. The board of chosen freeholders shall, when bonds are issued under the provisions of this section, certify to the county board of assessors, in each and every year, so long as any of said bonds remain outstanding, a sum sufficient to pay the interest accruing on said bonds for said year and the principal of any bond or bonds that shall mature in said year, and the said county board of

Amount annually raised.

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assessors shall include the said sum in the annual tax levy or assessment for said year, and the same shall be collected and paid over in the same manner and at the same time as other county taxes.

10. Any road constructed under the provisions of this act, or of any previous act entitled "An act to provide for the permanent improvement of public roads in this State," and 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 shall forever hereafter 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 imposed upon and vested in the said board of chosen freeholders, to the exclusion of all township, town, borough, village, or other municipal officers; *provided, however*, that nothing in this act shall divest the municipal authorities of townships or boroughs of their power to construct, grade, curb, pave or repair the sidewalks along said county roads, nor shall this power of said governing bodies 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 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.

Improved roads to be county roads.

Maintained by freeholders.

Proviso.

Road appropriation withheld for failure to maintain.

11. 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

County supervision of roads.

Term.	ble person as county supervisor of roads, who, 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 shall hold his office for three years and until his successor is appointed and qualified.
Bond.	He shall give bond to the board of chosen freeholders in the penal sum of one thousand dollars, conditioned for the faithful performance of the duties of his office, with such surety or sureties as the board shall approve, and shall receive such compensation for his services as the said board shall determine. Said supervisor may be summarily dismissed at any time by the board of chosen freeholders or the State Commissioner of Roads, whenever in their or his judgment such supervisor is incompetent or neglectful in the performance of his duties, in which event the board of chosen freeholders shall immediately appoint a new supervisor to hold for the unexpired term of the supervisor so discharged. 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.	
Moneys for maintenance and repairs.	
Cost of repairs paid by county collector.	
Acquire lands for road purposes.	
By purchase.	12. Whenever it is deemed advisable by the board of chosen freeholders of any county of this State to acquire land for the purpose of laying out, widening, changing or straightening any road to be made or improved under the provisions of this act, said board is hereby authorized to agree with the owner or owners of any land or lands required for that purpose as to the compensation to be paid by said board for a conveyance of said land or lands, and to make compensation therefor out of any moneys appli-

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cable 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, on the credit of the county, until the next annual taxes shall have been levied and collected. In case said board cannot agree with the owner or owners of any land for the acquisition of the same by the said board for road improvement purposes, said board shall have the power to acquire said land by condemnation, in the manner prescribed by law, and shall have authority and power to pay all necessary costs and expenses from any moneys applicable for road improvement purposes, or may borrow so much as may be necessary on temporary loans, on the credit of the county, until the next annual taxes shall have been levied and collected; nothing in this act contained, however, shall be so construed as to prevent said board from acquiring any land for road improvement purposes by gift.

By condemnation.

13. 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,

Improvement of road by abutting owners.

Such road to be a county road.

Change of location of road.

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.

Improve
approaches
to dwellings.

14. The board of chosen freeholders shall have full power to lay out, open, construct and improve all necessary approaches to any dwelling 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.

Improvement
of roads
bordering
on State
property.

15. Whenever any public road is sought to be improved under the provisions of the thirteenth 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.

Boundary
line roads.

16. The provisions of this act shall extend to the improvement of any road, or section of road, constituting the boundary line between two counties, whenever said improvement shall be agreed to by the board of chosen freeholders of both counties.

Act not to
apply to
cities.

17. The provisions of this act shall extend to townships, towns, boroughs, villages, or any municipality or municipalities except cities. The common council or other governing body, the assessor or assessors, the mayor or other chief executive officer, the clerk and collector, 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 assessors, the director of the board of chosen freeholders, the county

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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. Nothing, however, contained in section four of this act shall be held to apply to any township, town, borough, village, or other municipality.

Right of municipalities to improve roads.

Control thereof.

Exception.

18. Whenever any road, or section of road, constructed by the board of chosen freeholders, shall lie within the corporate limits of any city, such city may enter into an agreement, in writing, with the board of chosen freeholders for the repair and maintenance of said road, or section of road, and from and after the making of said agreement, and the approval thereof by the State Commissioner of Public Roads, said road shall be exclusively under the jurisdiction and control of such city, and shall be repaired and maintained by the same.

As to roads in cities.

19. 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 proceeding shall continue as prescribed in the act under which the improvement was commenced.

Repealer.

Proviso.

20. This act shall take effect immediately.

Approved March 27, 1906.

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CHAPTER 53.

A Supplement to an act entitled "An act to provide for the permanent improvement of public roads in this State (Revision of 1905)," approved March twenty-fifth, one thousand nine hundred and five.

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

Upon petition setting forth certain facts, road to be improved.

1. Whenever there shall be presented to the board of chosen freeholders of any county a petition signed by the owners of at least two-thirds, either in lineal feet or in area, of the land and real estate, fronting or bordering on any public road or section of road in such county, taking in said estimate of area all the lands of every such owner, which are assessed for taxes in said county, and which lie together in any farm tract or lot of which a part has a frontage on said road or section of road, praying the board to cause such road or section to be improved, under the act to which this act is a supplement, and setting forth that the township or other municipality within which the same shall lie has appropriated the ten per centum of the estimated cost of the said road as required by the said act, it shall be the duty of the board to cause such improvement to be made; *provided*, that the road or section desired to be so improved shall be at least one mile in length and be an extension of or connection with some other permanently improved or paved road or street.

Proviso.

2. This act shall take effect immediately.

Approved April 1, 1908.

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CHAPTER 54.

A Supplement to an act entitled "An act to provide for the permanent improvement of public roads in this State" (Revision 1905), approved March twenty-seventh, one thousand nine hundred and five.

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

1. 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 the act to which this is a supplement, shall be binding upon such township, or such other municipality, as the case may be.

Resolution to pay ten per cent. of cost of road binding on township.

2. This act shall take effect immediately.

Approved April 1, 1908.

CHAPTER 46.

A Supplement to an act entitled "A general act relating to boroughs" (Revision of 1897), approved April twenty-fourth, one thousand eight hundred and ninety-seven.

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

1. Whenever, in the judgment of the council of any borough of this State, it is necessary to construct a drain for surface water for the joint purpose of draining one or more improved roads of the county in which such borough is situate, and one or more roads or streets of said borough, and the board of chosen freeholders of the said county in which said borough is situate shall have approved the plans for such proposed drain and

Providing for surface draining improved roads and streets.

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shall have appropriated a specific sum towards the construction of such drain, with the proviso that such drain shall be constructed by said borough, and that said borough shall pay the balance of the cost of the same, then and in such case the said council may, by ordinance or resolution, cause such drain for surface water to be constructed, and may provide for the payment of the balance of the cost of the same by the appropriation of any money remaining in the borough treasury unpledged at the end of the preceding fiscal year; *provided*, that the amount of money in the borough treasury unpledged at the end of such preceding fiscal year shall be sufficient for such purpose.

2. This act shall take effect immediately.

Approved April 1, 1908.

 CHAPTER 69.

A Further Supplement to an act entitled "An act to authorize the board of chosen freeholders of any of the several counties of this State to lay out, open, construct, improve and maintain a public road therein," approved April seventh, one thousand eight hundred and eighty-eight.

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

Relative to
rebuilding
improved
roads to meet
increased
requirements.

1. Whenever, in any county of this State, where a road or roads shall have been constructed, improved and maintained under the provisions of the act to which this is a supplement, or the acts supplementary thereto and amendatory thereof, it shall become necessary, in the opinion of the body vested by law with the care of such road or roads, as expressed by resolution duly passed at a regular meeting of said body, to reinforce, relay, reconstruct, or rebuild any portion of the roadway paving, the curb and gutters, the drainage system, the lighting plant, including the laying of conduits and plac-

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ing cables therein, or bridges, or all of them upon such road or roads, to meet the requirements incident to increase of population, traffic and use, it shall be lawful for such body to so reinforce, reconstruct and rebuild such parts of said road or roads hereinbefore designated; *provided*, that all work exceeding in cost one thousand (\$1,000) dollars shall be done by contract, after advertisement in the public press, in the same manner as prescribed for work authorized under the act to which this is a supplement. Proviso.

2. Before advertising for proposals for any contract for work authorized by this act, the body vested by law, with the care of such road or roads, shall, from time to time, submit a full statement of the work necessary and proposed to be executed at that time, with the estimated cost of such work, prepared by a competent engineer, and a requisition for the amount of such cost to the body vested by law, with the control of the finances of said county. Estimates.

On receipt of said statement, estimate and requisition, the said body having control of the finances of said county shall make such financial arrangements as shall be necessary to provide the funds necessary to pay for the work so proposed, and until such financial arrangements are made, no further steps shall be taken in the prosecution of said proposed work. Financial arrangements.

3. The moneys necessary for defraying the costs, charges and expenses of the work herein authorized, shall be raised and obtained, and the bonds issued therefor in the manner and by the methods provided in said act to which this is a supplement, including provision for annual interest payments, and payments into a sinking fund, and shall be paid out by the county collector on the order of the body vested by law with the control of said road or roads; *provided*, that no payments for work done under any contract shall be made, except on the certificate of the engineer, approved by said body to take charge of said work. Bond Issue.

4. The total cost of all work authorized by this act, shall not exceed a sum equal to two-tenths of one per cent. Limitation as to cost.

Funds not
used for
ordinary
maintenance.

Repealer.

of the total assessed value of the ratables of said county assessed for county purposes in the year in which the last work authorized by this act shall be completed.

5. Nothing in this act shall authorize the expenditure of any moneys secured by the sale of bonds for the ordinary maintenance, repairs, and lighting of said road or roads.

6. All acts and parts of acts inconsistent herewith, be and the same are hereby repealed, and this act shall take effect immediately.

Approved April 2, 1908.

CHAPTER 238.

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.

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

Freeholders
may acquire
lands for im-
provement
of highways.

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 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 of any such highway and after such map shall be made and filed as aforesaid it shall be lawful for such board to acquire by gift or purchase in its corporate name any real estate in the county that may be necessary for that purpose,

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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 reason of 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.

Commissioners to fix compensation.

2. The justice or judge to whom such application shall be made, shall assign, by order, a time and place for the hearing of said application before himself or any other justice of the Supreme Court or Circuit Court judge not less than ten days after the date of the order, and direct not less than six days' notice thereof to be given said owners, occupants and persons interested therein, which notice shall be served upon parties residing in this State, either personally or by leaving at their residence, if known, and when the residence is unknown or out of the State, notice shall be given and published as the justice or judge shall direct, by publication for not less than one week, and by mailing to parties whose address can be ascertained, and notice given in the manner prescribed by said justice or judge shall be valid and effectual to bind all parties interested in the land or property; the order shall be filed in the office of the clerk of the county where the land or other property lies, and a notice of the pendency of the proceedings, which notice shall name the parties interested if known, and describe the land taken, shall be recorded in the same manner and place and for the same fees as notices.

Notice of hearing.

Service.

Order filed; what to show.

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of suits pending in chancery; in default whereof persons acquiring an interest in the property pending the proceedings without notice thereof, shall not be bound thereby.

When title
in dispute.

3. Where the title to the land or property shall appear to be in dispute, all known claimants may be made parties, and where it shall appear to the justice or judge that the ownership is in doubt, or that the names of the owners cannot be ascertained, he may direct notice to be published addressed to the unknown owners of the property, which shall be described in the notice, and the notice shall also set forth such statement of the former or last known owner as the justice or judge may direct, and the publication of such notice in the manner directed shall have the same force and effect as if personally served on such unknown owners.

Commission-
ers to ex-
amine and ap-
praise land.

4. Upon the day fixed for the hearing upon said application and filing in the office of the county clerk evidence satisfactory to the justice or judge before whom the hearing is held that notice has been served or published as required by this act, the said justice or judge shall appoint under his hand three disinterested freeholders, residents of the county where the land or property to be taken lies, commissioners to examine and appraise the said land or property and to assess the damages on at least six days' notice to be given to the persons interested in the land or property in such manner as shall be directed by said justice or judge, who shall in the order of appointment fix the date on or before which the commissioners must file their report; the justice or judge may by order extend the time, and the report shall be made on or before the day limited by said justice; the order of appointment shall be filed in the county clerk's office.

Oath of com-
missioners.

5. The commissioners having first taken and subscribed an oath or affirmation faithfully and impartially to examine the matter in question and to make a true report according to the best of their skill and understanding shall meet at the time and place appointed and proceed to view and examine the land or other property,

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and, after hearing if practicable such owner or his agent or representative, shall make a just and equitable appraisement of the value of the same, and an estimate and assessment of the damages that any such owner will sustain by the taking of said lands or other property with the appurtenances for the purposes aforesaid; in making such estimate and assessment of damages the commissioners shall take into account the benefits, if any, conferred by the improvement on the remainder of any lot or tract of land partly taken; in all cases where the lines of such public highway when the same shall be laid out, opened, widened, straightened, altered or the location thereof changed or otherwise improved shall include or bisect any building or the location thereof, the said commissioners may determine, as to them shall seem most just, either to condemn and cause to be taken the whole of said building, or so much thereof as stands upon the land required for such purpose, or to require the owner thereof to remove such building beyond the proposed lines of said road in case the owner has land enough left for that purpose, and the estimate or appraisement of damages of said commissioners, having due regard to all attendant expenses, shall be made accordingly; and the said commissioners shall in such case estimate and take into account the amount likely to be realized from the sale of any building or part of any building necessary to be taken, removed or disposed of for the purpose aforesaid; and the said commissioners shall also where any such public highway or any part thereof shall be vacated, estimate and take into account the benefits likely to accrue to any owner or owners by reason of such vacation; the report of said commissioners shall state the amount to be paid by the said board of chosen freeholders for such land or other property and damage aforesaid, as of the date of filing of the petition and order therein, which report shall be made in writing under the hands of said commissioners or any two of them, and filed by them within the time limited by the justice or judge in the office of the clerk of the county in which the land or other property is

Considerations in making assessment.

Removal of buildings.

Report.

Vacancy in
commission.

situate, to remain of record therein; if the report is not made within the time limited the powers of the commissioners shall cease, and an application may be made to a justice of the Supreme Court or a Circuit Court judge for the appointment of new commissioners on such notice as the justice or judge may direct; in case any commissioner shall die pending the proceedings, or is disqualified, or is unable to act, or shall fail or refuse to act and perform the duties of the appointment the other two commissioners shall proceed to perform the duties of their appointment with the same powers as if all three were acting.

Subsequent
proceedings.

6. Upon the filing of the report of the commissioners all subsequent proceedings had or taken relative thereto shall be in the manner provided by "An act to regulate the ascertainment and payment of compensation for property condemned or taken for public use" (Revision of 1900), approved March twentieth, one thousand nine hundred, and the supplements and amendments thereto, and from said report the said board or the owner of any of the land or property taken may appeal in the manner provided by said hereinbefore mentioned act.

Use of ac-
quired land.

7. Said lands when so acquired shall be incorporated in and become a part of said public highway and thereafter built, maintained and kept as a county road.

All expenses
met by free-
holders.

8. The compensation for services rendered by commissioners appointed in pursuance of this act and the necessary disbursements incurred by them in the discharge of their duties, together with counsel fees and other necessary expenses shall be fixed by order of said justice or judge and paid by the board of chosen freeholders of the county.

Borrow to
meet obliga-
tions.

9. It shall be lawful for the board of chosen freeholders to borrow such sum or sums of money as may be necessary in complying with the provisions of this act, and to issue notes therefor, the payment of which shall be provided for in the tax levy next thereafter made.

10. This act shall take effect immediately.

Approved April 13, 1908.

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CHAPTER 114.

An act to enable boards of chosen freeholders to accept as county roads, roads or sections of roads, in townships, which have been or shall hereafter be permanently improved without State or county aid.

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

1. Whenever any public road or section of road, located in any township in this State, has been or shall hereafter be permanently improved, without State or county aid, by the construction thereon of a macadamized road, or telford or other stone road, so that the same is or shall be, with reasonable repairs thereto, firm, smooth and convenient for travel at all seasons of the year, and approved by the State Commissioner of Public Roads, such public road or section of road may, upon the petition in writing of the township committee of the township wherein such public road or section of road so improved lies, addressed to and filed with the board of chosen freeholders of the county within which such township is situate, accompanied by a map or survey of the public road or section of road so improved, and a copy of the specifications under which such improvements were made, together with proofs showing full payment to the contractor or contractors for all work done, be, by said board of chosen freeholders, by resolution, accepted as and declared to be a county road, if in the judgment of said board of freeholders said road is of sufficient public importance; and such public road or section of road shall, upon such acceptance, forever thereafter be a county road and subject to the exclusive jurisdiction of said board of chosen freeholders, in the same manner as roads built by State aid, and the duty of keeping the same in repair shall devolve exclusively upon such board of chosen freeholders.

Roads improved by townships may be transferred to county on petition.

Becomes a county road.

Petition may
include.

2. More than one public road or section of road in the same township may be included in one petition.

3. This act shall take effect immediately.

Approved March 28, 1904.

CHAPTER 38.

An act to enable boards of chosen freeholders of two or more counties of this State, where such counties now are or hereafter may be charged by law with the maintenance and repair, or now are or hereafter may be in the possession and control of any road or roads lying wholly in one or partly in one and partly in other such county or counties, to rebuild, reconstruct, change the grade of, widen and improve such road or roads, and to acquire lands for such widening by gift, devise, purchase or condemnation, and to agree as to the proportion of the total expense thereof to be borne by each, and to issue bonds for the payment of the same, and to agree with any street railway company using or hereafter using such road or roads as to the share of the expenses thereof to be borne by it for and towards such improvement.

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

Joint im-
provement
and mainte-
nance of
roads by
counties.

1. Whenever two or more counties of this State now are or hereafter may be charged by law with the maintenance and repair, or now are or hereafter may be in the possession and control, of any road or roads lying wholly in one or partly in one and partly in other such county or counties, it shall be lawful for such counties to jointly rebuild, reconstruct, change the grade of, improve and widen such road or roads, and to acquire lands for such widening by gift, devise, purchase or condemnation, and agree as to the proportion of the total expense thereof to

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be borne by each; and it shall and may be lawful also for such boards to agree with any street railway company using or hereafter using such road or roads as to the share of the expense thereof to be borne by it for and towards such improvement.

Agreement
with street
railway com-
panies.

2. If such boards shall determine to make the improvements and do the work authorized by this act, it shall have prepared plans and specifications of such work; and if the cost thereof is in excess of one thousand dollars, shall advertise for bids, for two weeks, in at least two daily newspapers, or four weeks in two weekly newspapers, in each of such counties; and the contract shall be awarded to the lowest responsible bidder who shall furnish satisfactory security, to be approved of by said boards; and said boards, voting separately, shall approve of the plans and specifications and award the contract.

Plans and
cost.

Award of
contract.

3. In order to receive the bids each board shall appoint certain of its members, who together shall constitute a joint committee, and such joint committee shall receive the bids at the time and place specified in the advertisement, and shall open the bids, in open meeting of such committee, and publicly announce the amount or items comprising each bid, and the members of the committee from each county shall forthwith report the bids to their board for action thereon.

Receipt and
opening of
bids.

4. The contract for said work shall specify the share or proportion of the cost thereof to be borne and paid by each county, and each county shall be severally liable only for such share or proportion.

Proportionate
cost.

5. If in the opinion of said boards, or either of them, to be determined by a resolution passed by either of said counties separately for the purpose, to place in the tax levy for any one fiscal year its share or proportion of the cost of acquiring said lands, doing the work and making the improvements herein authorized, would be too burdensome on the taxpayers of such county or counties, then it shall be lawful for such board to issue the bonds of such county, to raise the funds wherewith to defray the cost aforesaid, which bonds shall run for a period not exceeding fifty years, shall bear interest at not exceeding

Bonds may
be issued.

Time and
rates.

four per centum per annum, and shall be sold for not less than par, and shall be signed by the director of the board and the county collector, under the corporate seal of the county; and the board so issuing such bonds shall annually thereafter place in the tax levy a sufficient sum to meet the interest on said bonds, and a further sum to be deposited in a sinking fund, to be created for the purpose, to pay and discharge said bonds at maturity.

Sinking fund.

6. This act shall take effect immediately.

Approved March 27, 1906.

CHAPTER 185.

An act relative to past due assessments under an act entitled "An act to provide for the permanent improvement of public roads in this State," approved March twenty-second, one thousand eight hundred and ninety-five.

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

Satisfaction
of assessment
by county
clerk.

1. It shall be the duty of the collector or receiver of taxes in any city, township, borough, or other municipality, in which may lie the lands assessed for the amount of peculiar benefits conferred thereon in the manner prescribed by the act of the Legislature of this State entitled "An act to provide for the permanent improvement of public roads in this State," approved March twenty-second, one thousand eight hundred and ninety-five, to accept the amount due thereon, both of principal and all interest, as prescribed by the said statute, in full satisfaction of such assessments, and to give a receipt for the amount paid in satisfaction thereof to the person paying the same, which receipt, signed by such collector or receiver of taxes, shall be sufficient evidence of the payment and satisfaction of such assessments, and upon presentation thereof to the clerk of the county in which such land

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is situate, he shall satisfy the assessment and other record or records in his office relating to such unpaid assessments so far as relates to the payment of the said assessment on payment to him of a fee of twenty cents for his services. Fee.

2. This act shall take effect immediately.

Approved May 2, 1906.

CHAPTER 189.

Supplement to an act entitled "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.

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

1. Wherever any road or portion thereof is on the dividing line between two or more counties of this State, and part of the width thereof is in one county and part in another, or part of the length and part of the width thereof is in one county and part in another, and (a) the boards of chosen freeholders of such counties, or (b) the board or boards of chosen freeholders of such county or counties, together with one or more of the municipalities of such county or counties abutting on said road, or any part thereof, or (c) the municipalities of different counties abutting on said road or any part thereof, desire the said road, or a portion thereof, should be improved within the limits of said counties, in accordance to the act to which this is a supplement, and the supplements thereto and the amendments thereof, it shall and may be lawful for such board or boards of chosen freeholders and municipalities, or any of said municipalities acting together, or such municipalities of different counties abutting on said road, or any part thereof, acting together, to improve said road for its entire length, or any portion thereof, within the limits of such counties, regardless of whether or not a portion or portions thereof may be wholly in one

Joint improvement of road lying in different municipalities.

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county or more counties, and agree upon the proportion of the expense thereof to be borne by such board or boards of chosen freeholders and the municipality or municipalities undertaking said improvement.

Resolutions
of intent.

2. If said boards of chosen freeholders and said municipalities, or such of them as are authorized to make said improvement under the first section of this act, desire to undertake said improvement, such board or boards of chosen freeholders shall pass a resolution in accordance to the act to which this is a supplement, and any supplement thereto and amendment thereof; and if such municipality or municipalities desire to make said improvement either in conjunction with or without such board or boards of chosen freeholders, the governing body of such municipality or municipalities shall pass a resolution in the form and in accordance with the terms of the act to which this is a supplement, and any supplement thereto and amendment thereof, which said resolution or resolutions shall be passed and approved (if approval is necessary) in the same manner that resolutions are passed and approved by such board or boards of chosen freeholders or governing body of such municipality or municipalities.

Surveys
made and
plans pre-
pared.

3. That after the passage of said resolutions, the board or boards of chosen freeholders and municipality or municipalities undertaking said improvement shall cause surveys to be made, and plans, cross-sections and specifications of the work to be done on the road to be prepared, and do and cause to be done the various acts and things required to be done under the act to which this is a supplement, and the supplements thereto and amendments thereof, in the same manner as if such road or portion thereof lay wholly within one county and the improvement was undertaken by the board of chosen freeholders of such county.

Joint com-
mittee.

4. In order to receive bids, the board or boards of chosen freeholders or municipality or municipalities undertaking said improvement shall each appoint certain of its members, who together shall constitute a joint committee, and such joint committee shall organize by elect-

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ing a chairman and clerk. Said joint committee shall advertise for bids under the terms, conditions, and in the manner specified in the act to which this is a supplement, and the supplements thereto and the amendments thereof, which advertisement shall have at the foot thereof the names of the chairman and clerk of said joint committee, and said bids shall be received at the time and place specified in the advertisement and opened in open meeting of such joint committee, and the amount or items composing each bid shall be publicly announced, and the members of the committee from said board or boards of chosen freeholders or municipality or municipalities appointing them shall forthwith report the bids to the board or body so appointing them for action thereon; and thereupon the board or boards of chosen freeholders and the governing body or bodies of such municipality or municipalities undertaking said improvement, voting separately, shall by resolution award the contract for said improvement in the same manner provided in the act to which this is a supplement, and the supplements thereto and amendments thereof, as if said road lay wholly in the body of one county and the improvement was undertaken by the board of chosen freeholders of such county.

Invite
proposalsOpening of
bids.Award con-
tract.

5. The contract for said work shall specify the share or proportion of the cost of such improvement to be borne and paid by the county or counties and municipality or municipalities engaging in said improvement, and each of the respective boards or bodies engaging in said improvement shall be liable for such share or proportion, and no more.

Proportion-
ate cost.

6. If in the opinion of any board of chosen freeholders or any municipality joining in or undertaking such improvement, to be determined by a resolution passed by such board of chosen freeholders or the governing body of such municipality in the manner that resolutions are passed and approved (if such approval is necessary) by such board or body, to place in the tax levy for any one fiscal year the proportion of the expense of said improvement to be borne by it would be too burdensome on the taxpayers of such county or municipality, then it shall be

May issue
bonds to
meet expense.

Title of bonds.	Time and rate.	Payment at maturity.	By whom road maintained.	Act construed.
<p>lawful for such board or municipality to issue bonds for its proportion of the expense of said improvement to be borne by it. These bonds shall be designated as "road improvement bonds," and shall be for such sums and such amounts, payable in not less than six nor more than thirty years from the date thereof, with interest at a rate not exceeding five per centum per annum, payable annually or semi-annually, as such board of chosen freeholders or governing body of such municipality by resolution may determine. Said bonds may be either registered or coupon and interchangeable from registered to coupon or coupon to registered at the will of the holder thereof, and shall be signed, sealed and executed in the manner that bonds of such county or municipality are usually signed, sealed and executed, or as such board of chosen freeholders or governing body of such municipality may by resolution direct; that annually after the issue of such bonds there shall be placed in the tax levy of such board or unicipality issuing said bonds a sum sufficient to pay the interest accruing on said bonds, and likewise a sum which, with interest and accumulations thereon, will be sufficient to pay off and discharge said bonds at maturity, which said sums of money collected for the discharge of principal, together with the accumulations and interest shall be deposited and kept in a sinking fund, to be used for the payment of said bonds at maturity.</p>				
<p>7. After the completion of the said improvement, the said road or portion thereof shall be maintained by the municipalities abutting said road or portion thereof so improved, unless the board of chosen freeholders of either county, by resolution, passed by a majority of the whole board, shall accept and adopt said road or the portion thereof so improved as a county road, in which case the duty of maintaining that part of said road or portion thereof so improved lying in such county shall thereafter be upon such board of chosen freeholders.</p>				
<p>8. This act shall not be taken or construed to repeal any existing act.</p>				
<p>9. This act shall take effect immediately.</p>				
<p>Approved May 2, 1906.</p>				

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CHAPTER 220.

An act to amend an act entitled "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.

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

1. Section eleven of the act referred to in the title of this act is hereby amended to read as follows: Section 11 amended.

11. 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, who, before assuming the duty of their offices, shall each 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 their offices for three years and until a successor is appointed and qualified. Each shall give bond to the board of chosen freeholders in the penal sum of one thousand dollars, conditioned for the faithful performance of the duties of his office, with such surety or sureties as the board shall approve, and shall receive such compensation for his services as the said board shall determine. Nothing in this act contained, however, shall affect the term of office of any county engineer having a term of office prescribed by statute. Said supervisor may be summarily dismissed at any time by the board of chosen freeholders or the State Commissioner of Roads whenever in its or his judgment such supervisor is incompetent or neglectful in the performance of his duties, in which event the board of chosen freeholders shall immediately appoint a new supervisor to hold for the unexpired term of the supervisor so discharged. The said board of chosen freeholders shall appropriate all moneys necessary to keep any and all roads constructed under this act in

County supervisor of roads and engineer.

Term.

Bond.

Right to dismiss supervisor.

Maintenance of roads.

Cost paid.

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.

2. This act shall take effect immediately.

Approved April 20, 1909.

CHAPTER 34.

A Further Supplement to an act entitled "An act concerning roads" (Revision), approved March twenty-seventh, one thousand eight hundred and seventy-four.

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

Freeholders
appointed
by court to
view road.

1. Whenever in any county of this State where the board of chosen freeholders shall consist of less than six members, an application shall have heretofore or shall hereafter be made to the Court of Common Pleas of said county for the appointment of chosen freeholders of said county to view any road or roads laid out, vacated or altered by the surveyors of the highways of said county, it shall be lawful for said court to appoint all of the members of said board of chosen freeholders to view said road so laid out, vacated or altered, and certify the same to said court, and the return of the members of said board of chosen freeholders so appointed, or a majority thereof, shall be of the same force and effect as if six chosen freeholders had been lawfully appointed by said court under the act to which this act is a supplement.

2. This act shall take effect immediately.

Approved March 31, 1909.

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CHAPTER 236.

A Further Supplement to an act entitled "An act for the permanent improvement of public roads in this State" (Revision of 1905), approved March twenty-seventh, one thousand nine hundred and five.

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

1. 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 appoint two persons to be known as "Assistant Supervisors of Roads," who shall under the instruction and supervision of the Commissioner of Public Roads, have jurisdiction over all roads in respect to repairs to said roads made by the Commissioner of Public Roads under the provisions of this act. The said Commissioner of Public Roads may either pay over to the collector of the board of chosen freeholders of a county or the proper fiscal officer of any other municipality of the county, the amount of money estimated to be necessary for the repair of any road in such municipality, or said commissioner may invite, by advertisement, sealed proposals for the repair of any such road and award a contract to the lowest average responsible bidder, reserving to himself, however, the right to reject any and all bids. The said commissioner shall be allowed the sum of three thousand dollars per year for the employment of said assistant supervisors, and the further sum of three thou-

Two assistant supervisors of roads.

Duties.

Use of moneys.

Salaries of supervisors.

Expenses
met.

sand dollars per year, or so much thereof as may be necessary for the expenses of said Commissioner of Public Roads in defraying the traveling and other expenses of said supervisors, said sum to be paid from such moneys as shall be appropriated to said Commissioner of Public Roads for the repair of improved roads throughout this State. Said supervisors shall hold their positions during the pleasure of the Commissioner of Public Roads.

Tenure.

2. This act shall take effect immediately.

Approved April 21, 1909.

CHAPTER 33.

An act constituting a State Highway Commission and defining its powers and duties.

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

State high-
way commis-
sion.

1. A commission to be known as the State Highway Commission, consisting of the Governor, President of the Senate, Speaker of the House of Assembly and the Commissioner of Public Roads, is hereby created, which commission shall be charged with the duties hereinafter specified. Said commissioners shall receive no compensation for their services under this act, but shall be entitled to their actual expenses incurred in carrying out the provisions of this act, to be paid out of any appropriation made to said commission.

Expenses
met.

Map and
route of
ocean boule-
vard.

2. The Commissioner of Public Roads shall, under the direction of said State Highway Commission, prepare a map and designate thereon a route for an ocean boulevard, commencing at Atlantic Highlands, in the county of Monmouth, and continuing thence to the city of Cape May, in the county of Cape May. Said route shall follow, as far as practicable, the available and convenient improved roads now constructed, which route shall be as near the ocean front as practicable. Such map when prepared and approved by said commission shall be filed in the office

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of the Commissioner of Public Roads. Said Commission of Public Roads, with the approval of said State Highway Commission, may make such changes from time to time in said route as shall be deemed necessary, and shall prepare and file a map showing said changes in his office.

3. The Commissioner of Public Roads shall, after the filing of said map, prepare duplicates thereof, and shall furnish one copy of said duplicates to the board of chosen freeholders and one copy to the common council or other governing body of each county or municipality through which said proposed ocean boulevard will pass. The said commissioners shall designate on said map just what portion of said proposed route in any county or in any municipality has been improved.

Duplicate maps furnished municipalities and counties affected.

4. The board of chosen freeholders of any county, or the governing body of any other municipality desiring to improve any road, or portion thereof, shown on the map so as aforesaid prepared and filed by the Commissioner of Public Roads, may improve and pay for said road, or any portion thereof, as provided in the act of the Legislature, entitled "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.

Improvement of proposed route.

5. This act shall take effect immediately.

Approved March 30, 1909.

CHAPTER 322.

An act concerning roads.

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

1. Whenever any road or section of road which has been or shall be constructed by the board of chosen freeholders of any county, with or without state aid, shall lie within the corporate limits of any borough, town, township or other municipality, such borough, town,

Repair and maintenance of roads.

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township or other municipality, except cities, may enter into an agreement, in writing, with said board of freeholders; whereby said borough, town, township or other municipality shall hereafter assume the repair and maintenance of said road or section of road, and from and after the making of said agreement, and the approval thereof by the State Commissioner of Public Roads, said road or section thereof shall cease to be a county road and shall be exclusively under the jurisdiction and control of said borough, town, township or other municipality, and shall thereafter be repaired and maintained by the same under the supervision of the State Commissioner of Public Roads.

2. All acts and parts of acts inconsistent with the provisions of this act be and the same are hereby repealed.

3. This act shall take effect immediately.

Approved June 26, 1906.

 CHAPTER 15.

An act to amend and to supplement an act entitled "An act to authorize the improvement of roads, streets and highways in towns, boroughs, villages and municipalities governed by boards of commissioners or improvement commissions, and to provide for the issuing of bonds for the payment of the expenses thereof," approved March sixteenth, one thousand eight hundred and ninety-one.

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

Section 1
amended.

1. Section one of an act entitled "An act to authorize the improvement of roads, streets and highways in towns, boroughs, villages and municipalities governed by boards of commissioners or improvement commissions, and to provide for the issuing of bonds for the payment of the expenses thereof," approved March sixteenth, one thou-

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sand eight hundred and ninety-one, is hereby amended so as to read as follows:

1. It shall be lawful for the governing body of any town, borough or village or of any municipality governed by a board of commissioners or improvement commission within this State, whenever authorized by a majority of the votes cast at an election held for the purpose as herein provided to issue bonds from time to time in the corporate name of such municipality in such amounts that there shall never be at one time outstanding bonds of such municipality issued under the authority of this act in excess of sixty thousand dollars, and to apply the proceeds of such bonds to the payment of the cost and expenses of improving the roads, streets and highways within such municipality.

Bond issue when authorized by voters.

Total issue.

2. Section two of said act is hereby amended so as to read as follows:

Section 2 amended.

2. Whenever in the judgment of the governing body of such town, borough, village or other municipality it shall be deemed advisable to issue bonds hereunder the said governing body may, by resolution adopted by a majority of the members thereof, fix the amount of bonds to be issued, direct a special election to be held, and designate the time and place or places for holding such election.

Special election.

Notice of such election shall be given by posting copies of such resolution in three public places in such town, borough, village or other municipality at least fifteen days before the date fixed for such election and by printing such resolution once in each week for two successive weeks in one or more newspapers published in such town, borough, village or other municipality, if any such exists, or if none, then in a newspaper published in the county. There shall be no registration for such election, but the board or boards of elections shall procure and use at such election a certified copy of the register of voters used at the last preceding general election, and no person shall be entitled to vote whose name does not appear on such register, unless such person shall appear before the board and satisfy said board by affidavit, which the said board

Notice.

Registration.

Election,
how con-
ducted.

Ballots.

Section 3
amended.

Procedure
if bond issue
authorized.

Rate.

Time.

Additional
powers
conferred.

hereby is authorized to take, that such person has acquired the right of suffrage in said election district since said registration was made. The polls shall be kept open for the time provided by law for general elections, and such election shall be in all respects conducted and the vote canvassed in the manner provided by law for general elections, except as herein otherwise provided. The ballots used at such election shall be unofficial, and shall have printed or written thereon either the words "For the issue of bonds" or the words "Against the issue of bonds." No official envelopes shall be required.

3. Section three of said act is hereby amended so as to read as follows:

3. If at such election a majority of all ballots cast shall be "For the issue of bonds," it shall be lawful for such governing body from time to time to issue and sell bonds of such town, borough or village or other municipality in an aggregate principal sum not exceeding the amount mentioned in the resolution calling such election, and to apply the proceeds of such bonds to the improvement of roads, streets and highways in such town, borough or village or other municipality as they may by resolution determine. Such bonds shall be registered or coupon bonds, shall bear interest not exceeding five per centum per annum, payable semi-annually, shall be payable not more than twenty years from their date of issue, shall be executed and shall be sold at public sale for not less than par and accrued interest as such governing body shall by resolution provide. All such bonds shall recite that they are issued in pursuance of this act and of said election, and shall set forth the date of said election, which recital shall be conclusive evidence of their validity and the regularity of their issue.

4. The powers conferred by this act and by the act hereby amended shall be deemed additional to and independent of any and all powers and authority conferred by, and not subject to any limitation contained in, any and all other law or laws.

5. This act shall take effect immediately.

Approved March 16, 1909.

COMMISSIONER OF PUBLIC ROADS.

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CHAPTER 239.

A supplement to an act entitled "An act to provide for the permanent improvement of public roads in this State," approved April first, one thousand nine hundred and three.

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

1. Wherever any road in this State runs in or through two or more counties, and said counties engage in the maintenance and operation thereof in its entirety, at joint expense, it shall and may be lawful for the boards of chosen freeholders of such counties, by resolution, to be passed separately by each board, to declare their intention to cause such road, in its entirety, or any portion thereof, to be improved under the provisions of the above-entitled act, and the supplements thereto and amendments thereof, as well as this supplement; and to cause all necessary surveys to be made and specifications to be prepared; and after said specifications shall be approved by such boards of freeholders, by resolutions passed separately by each board, the said specifications shall be certified to the State Commissioner of Public Roads, for his approval or rejection, and if approved by him, such boards are authorized to appoint members from the board, to comprise a joint committee, to advertise for bids for said improvement, which bids shall be furnished in sealed envelopes and presented to the committee in open meeting, at the time called for in the advertisement, and the amount of each of said bills shall, in open meeting, be publicly announced, and thereafter the members of the committee from each county shall report the amount of the bids to their respective boards, with their recommendations, and the contract shall be awarded, on resolution of each board voting separately, to the lowest responsible bidder, who shall furnish satisfactory security, to be approved of by said boards; that the contract for such improvement shall specify the proportion of the cost

Joint improvement of roads.

Specifications and proposals.

Awarding contract.

Apportion cost.

Advertising.	that each county will bear of said improvement, as between themselves, and neither county shall be liable for a greater amount than the proportion so specified; and the joint committee shall advertise for bids in at least two daily newspapers, printed and circulating in each county, for the period of two weeks, or in at least two weekly newspapers, printed and circulating in each of
Proceedings.	said counties, for at least four weeks; and all proceedings touching and concerning the improvement of such road shall conform, as nearly as possible, to the proceedings mentioned in the act to which this is a supplement, or any supplement thereto or amendment thereof, except
State aid.	as modified by this act; and such counties taken together shall be entitled to receive one-third of the cost of the improvement set out in the specifications presented to the State Road Commissioner, as aforesaid, or as modified with his consent, in the manner specified in said act for the payment to any county for improving a road wholly
Proviso.	within its limits; <i>provided, however</i> , that of said one-third so paid by the State each county shall receive the same proportion as it bears or is charged with on account of the cost of said improvement.
Meeting cost.	2. If, in the opinion of either of such boards, to place in the tax levy for any one fiscal year the moneys necessary to pay for the work aforesaid would be too burdensome on the taxpayers of such county, then, in order that each county may raise the funds wherewith to pay its share of the cost of such improvement, either board being of the opinion aforesaid may, by a resolution adopted by a vote of at least two-thirds of all its members, borrow such sum or sums of money as may be necessary for the payment of its share or proportion of such cost, by the sale of the bonds of such county, issued in the name of the board of chosen freeholders thereof, and in such sum as the board may deem proper, said bonds to bear interest at a rate not exceeding five per cent. per annum, and to be sold for not less than par, and said bonds shall not exceed in the aggregate the cost of the improvement to said board, and shall be so divided that one-tenth of the account of the bonds issued shall fall due in one year
May issue bonds.	
When payable.	

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from their date and one-tenth each succeeding year thereafter, for the period of ten years from their date, and shall be either coupon or registered bonds, as the board of freeholders may determine; the principal and interest thereof shall be made payable at the office of the county collector of such county; said bonds shall be signed by the director of such board and the county collector, and shall be sealed with the seal of the county, and the county collector shall keep a record thereof; it shall be the duty of the board of chosen freeholders each year to place in the tax levy for such county, in each year, so long as said bonds shall run, a sufficient sum to pay the interest accruing thereon for said year and the principal of the bonds that shall mature in said year.

Interest and
principal.

3. Whenever the character of the soil or foundation of any road, or any part thereof, sought to be improved, and the traffic over the same, are such that in the opinion of any board seeking the same, if the road lies wholly within one county, or in the opinion of the boards jointly engaged in the maintenance and operation of a road in its entirety, running through two or more counties, ascertained by resolution passed by such boards separately for such purpose, it is necessary to build a foundation for such road and pave the same with a block or other substantial pavement other than that specifically mentioned in the first section of the act to which this is a supplement, it shall be lawful for such boards to include such work in the specifications for said work to be presented to the State Commissioner of Public Roads, as aforesaid.

Paving public
roads.

4. This act shall take effect immediately.

Approved April 8, 1903.

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CHAPTER 231.

Supplement to an act entitled "An act to provide for the permanent improvement of public roads in this State," approved April first, one thousand nine hundred and three.

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

Cause portions of road to conform to altered grade.

1. Whenever any public road has been or shall hereafter be improved under the provisions of the act to which this is a supplement, 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 the act to which this is a supplement, 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.

Proceedings.

Municipalities may improve road.

2. 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 the act to which this is a supplement, without the approval and consent of the board of chosen freeholders of the county within which such road may be located.

Proviso.

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3. The cost and expense of any of the public improvements authorized by this act 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.

Assessment
for benefits.

4. Nothing in this act contained shall be construed to in any way 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 the act to which this is a supplement.

Maintenance
of road.

5. This act shall take effect immediately.

Approved April 8, 1903.

CHAPTER 61.

An act to authorize the board of chosen freeholders of any of the several counties of this State to straighten, change the location of and vacate any portion of any public road or highway heretofore or hereafter acquired, constructed and improved in any such county by the board of chosen freeholders thereof, and to improve the portion included in such changed location; *provided*, any owner or owners of real estate along such portion is or are willing to contribute the whole cost and expense thereof; *and provided further*, every owner of land upon that part of said road proposed to be vacated under this act shall consent in writing to such change of location and vacation.

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

1. The board of chosen freeholders of any of the several counties of this State shall have the power and au-

Change and
improve
roads.

Proviso.

thority to straighten, change the location of and vacate any portion of any public road or highway heretofore or hereafter acquired, constructed and improved in any such county by the board of chosen freeholders thereof, and to improve the portion included in such changed location; *provided*, any owner or owners of real estate along such portion is or are willing to contribute the whole cost and expense thereof; *and provided further*, every owner of land upon that part of such road or highway proposed to be vacated under this act shall consent in writing to such change of location and vacation.

Presentation
by owners.

Map and
specifications.

2. The property owner or owners desiring such straightening, change of location and vacation, and the improvement of the portion included in such changed location, may present to the board of chosen freeholders of any such county a petition therefor, which shall be accompanied by a map and specifications showing the proposed straightening, change of location and vacation, and in what manner the portion included in such changed location is to be improved, and offering to contribute the whole cost and expense thereof; and said board, if it approve of the same, and is satisfied that every owner of land upon that part of said road or highway proposed to be vacated consents thereto, shall authorize the same; and thereupon it shall be lawful for said board to acquire the land necessary for said change of location, by gift, grant for nominal consideration, or by exchange of said portion so vacated for said portion necessary to be acquired; and said board is empowered, if required in any such exchange, to make, execute and deliver a deed or deeds of conveyance, conveying in fee-simple the title, if any, of any such board to the land so conveyed by it; and it shall be further lawful for said board, upon such terms as it shall determine, or as shall be agreed upon with such owner or owners, either to proceed and make the said improvement itself, the whole cost and expense thereof to be paid by said owner or owners, or to allow the said owner or owners to make the same themselves, subject to the approval of said board, and after the completion of the same, the portion which shall be superseded by said

Powers of
freeholders.

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changed location shall be deemed and taken as vacated as a part of said county or public road or highway.

3. All acts and parts of acts inconsistent with this act Repealer. be and the same are hereby repealed, and this act to be deemed and taken as a public act, to take effect immediately.

Approved March 24, 1903.

CHAPTER 264.

An act to enable boards of chosen freeholders to accept roads or sections of roads in cities, towns, townships or boroughs, and to maintain the same as county roads.

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

1. Whenever any public road or street, or section of a road or street, located in any township, town, city, borough or other municipality in this State, runs to the boundary of such township or other municipality and is maintained as a township road, and at the boundary of such municipality meets and is continued as another road or street in another municipality in the same county, the board of chosen freeholders of such county may, upon the petition of the common council, township committee or other governing body of such municipalities, respectively, accept such road and thereafter maintain the same as a county road and have exclusive jurisdiction thereof in the same manner as other county roads are maintained and cared for.

Improved roads in different municipalities accepted and maintained as county road.

2. This act shall take effect immediately.

Passed October 10, 1907.

CHANGING LOCATION OR IMPROVING.

CHAPTER 75.

An act to amend an act entitled "An act to provide for the permanent improvement of public roads in this State," approved March twenty-second, one thousand eight hundred and ninety-five.

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

Property owners to contribute whole expense of improvement.

1. The eighteenth section of the said act shall be amended so as to read as follows:

18. That if any property owners or owner along any road in any county of this State which has not been improved or is not undergoing improvement under the previous sections of this act shall desire any section of any road in such county to be improved or to be changed in location and improved, and are or is willing to contribute the whole expense of such improvement, and provided every owner of land upon that part of the road proposed to be vacated under this act shall consent in writing to such vacation, the supervisor of roads of such county shall, upon a written request of such owners or owner, make a plan of such sections of roads so to be improved or changed in location and improved, in which shall be given the levels and distances, and also specifications stating the materials that may be used and the manner of using them; and a copy of such plan, location, change of location, specifications and of any bids to do such work shall then be submitted by such owners or owner to the board of chosen freeholders, and if such board shall approve them and any change of location which may be proposed, it shall then be lawful for such owners or owner to accept any bid or bids so approved from among the bidders, or at their own expense to proceed to build such section of road according to such plan,

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location and specifications, and such owners or owner shall have control of the expenditure of moneys used to make such improvements, subject to the approval and supervision of the supervisor of such county; and upon the completion of the improvements to the satisfaction of the said supervisor and said board of chosen freeholders, and upon the submission to said board of receipts showing full payment for materials furnished and work done under the plan and specifications, such section of road so improved shall, if the board of chosen freeholders shall so declare, thereafter be a county road, but otherwise shall remain an ordinary public highway, and any and all portions of any road now existing which may have been rendered unnecessary or be superseded by the new road so constructed shall be vacated and abandoned as a public road, without other action or proceedings than the approval of the board of chosen freeholders as hereinbefore provided; and the said supervisor shall be paid by the aforesaid owners or owner the sum of ten dollars for making the plan, the sum of five dollars for drawing the specifications, and the sum of five dollars for the supervision of the work, and in case such supervisor is not a civil engineer, and actual survey is necessary, then such owners or owner, at their or his expense, shall procure a survey, which shall be subject to the approval of such supervisor, which survey shall take the place of the plan before mentioned, and shall include all the new roads proposed to be constructed and all the old roads proposed to be abandoned.

Owner to
have control
of expendi-
tures.

Old road
vacated.

Approved March 23, 1896.

CHAPTER 119.

An act providing for the widening of certain county roads.

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

Freeholders
may acquire
lands to
widen road.

1. It shall be lawful for the board of chosen freeholders of any county in this State to acquire by purchase lands adjoining any public road under the care of said board or any commission in said county, and running through two or more municipalities therein, for the purpose of widening said road at any point where such widening shall, in the judgment of said board, for any reason be desirable. In case such board shall be unable to agree with the owners of said lands for the purchase thereof, then it may acquire the same by condemnation in the manner provided in "An act to regulate the ascertainment and payment of compensation for property condemned or taken for public use (Revision of 1900)," approved March twentieth, one thousand nine hundred, and the supplements thereto.

Public road.

2. Said lands when so acquired shall be incorporated in and become a part of said public road.

Bonds to
meet pay-
ment.

3. Said board of chosen freeholders shall have power to pay for said lands, when purchased or condemned, by the issuance and sale, for not less than par, of temporary loan bonds, bearing interest at not exceeding four per centum per annum, payable half-yearly. The payment of said bonds, with interest, shall be provided for in the tax levy or budget next thereafter made.

Amount.

4. The total limit of expenditure under this act in any county shall not exceed five thousand dollars.

5. This act shall take effect immediately.

Approved April 6, 1905.

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CHAPTER 63.

An act to provide for the extension and maintenance of public roads in this State.

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

1. Whenever the common council, board of aldermen, town council, township committee or other governing body of any city, town, township, borough or other municipality in this State shall, by resolution in writing, consent to the extension of any public road, boulevard or highway constructed under the provisions of chapter ninety-seven of the laws of one thousand nine hundred and three, or any supplement thereto or amendment thereof, or by any board of freeholders or under the jurisdiction of any board of freeholders in this State, under any act authorizing such construction, and which lies partly within such municipality, and shall, in such resolution, request the further extension of such public road, boulevard or highway as a county road for the purpose of making and effectuating a complete and continuous county road in or through or partly in such municipality, then and in such case it shall be lawful for the board of chosen freeholders of the county wherein said city, town, township, borough or other municipality is situated, by resolution to lay out, open, construct, reconstruct, extend, improve and maintain an extension of any such public road in and through any such city, town, township, borough or other municipality; and for such purpose such board of chosen freeholders shall have the right to improve, reconstruct, take over, accept and maintain any public road, or section of road, already laid out in such city, town, township, borough or other municipality, in such manner as the said board of chosen freeholders shall deem necessary.

Extension of highways to become county roads.

Rights of freeholders.

Such extension of such public road can be authorized, accepted and adopted by said board of chosen freeholders only upon the following conditions:

Conditions of acceptance.

Necessary.

(a) The extension must be, in the judgment of such board of chosen freeholders, of public importance.

Approval
by road
commissioner.

(b) The State Commissioner of Public Roads shall approve the resolution authorizing such extension before the same shall become effective.

Certificate
of consent.

(c) The consent presented to such board of chosen freeholders by any such city, town, township, borough or other municipality must be accompanied by a certificate that the whole of the proposed road, or section of road, if any, which is to be used for the purpose of such extension, has been permanently improved without state or county aid by the construction thereon of a macadamized road, or telford or other stone road, so that the same is, or shall be, with reasonable repairs thereto, firm, smooth and convenient for travel at all seasons of the year; and accompanied by a map or survey of such road, or section of road, and a brief description of the specifications under which such improvements were made, together with evidence that full payment to the contractor or contractors for all work done has been made.

Capable of
repairs.

Map.

Freeholders
to have ex-
clusive juris-
diction.

Any such extension of such county road, upon its acceptance by any such board of chosen freeholders, shall forever thereafter be a county road and subject to the exclusive jurisdiction of said board of chosen freeholders, except as hereinafter provided. It shall be constructed, reconstructed, laid out, improved and maintained under the provisions of chapter ninety-seven of the laws of one thousand nine hundred and three, or any supplement thereto or amendment thereof, and the duty of keeping the same in repair shall devolve exclusively upon such board of chosen freeholders.

Lighted by
municipality.

2. Except for the purpose of maintaining such road in good repair for the purposes aforesaid, and for such other purposes as are set forth in chapter ninety-seven of the laws of one thousand nine hundred and three, or any supplement thereto or amendment thereof, such city, town, township, borough or other municipality in which such extension shall be constructed, reconstructed, laid out, improved and maintained, shall have the right to light the

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same, as part of the system of streets in such city, town, township, borough or other municipality.

3. Chapter one hundred and twenty-nine of the laws of one thousand eight hundred and ninety-seven, and all other acts and parts of acts inconsistent with the provisions of this act are hereby repealed.

4. This act shall take effect immediately.

Approved March 28, 1905.

REPAIR OF COUNTY ROADS.

CHAPTER 182.

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:*

1. It shall be lawful for the boards of chosen freeholders in the several counties of this State that have heretofore acquired and improved, or that may hereafter acquire and improve, any road or roads under the act to which this is a supplement, to keep and maintain such roads in repair in the same manner and to the same extent as state aid roads may now be repaired and maintained under the act entitled "An act to provide for the permanent improvement of public roads in this State (Revision of 1905)," and it shall not be necessary to advertise or contract for work or materials for such repair otherwise than as required for state aid road repairs in and by said last-mentioned act, its supplements and amendments.

Maintenance
of county
roads.

2. It shall be lawful for the board of chosen freeholders of any county that has heretofore acquired and improved any road or roads under the act to which this is a supplement (and which has a county supervisor of state aid roads), by resolution, to place the repair and maintenance

Under county
supervisor of
roads.

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of all such roads, so acquired and improved, under the charge and supervision of such county supervisor of roads.

3. This act shall take effect immediately.

Approved May 13, 1907.

CHAPTER 77.

An act concerning roads.

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

Freeholders
to regulate
use of im-
proved streets
or roads.

1. The board of chosen freeholders in any county in this State that shall have improved any roads or streets in such county, and shall be charged with the repair of such roads or streets, shall have power, by resolution, to regulate or prohibit the tearing up or excavating in any such roads or streets for the laying, replacing or repairing of water, gas or sewer pipes, for making any drain or for any other purpose; to prevent the disturbing or tearing up of such roads or streets by the locking of wheels of any vehicle or attaching a drag to such vehicle; to prevent the filling up of gutters along such roads or streets, and to prevent obstruction and damage to such roads or streets by spilling or throwing stones, dirt or other materials on such roads or streets.

Penalty for
violation.

2. The board of chosen freeholders of any such county may prescribe a penalty by a fine not exceeding one hundred dollars for the violation of any such resolution or any section thereof, and that the court of justice before whom proceedings shall be instituted shall determine the amount of the fine, not to exceed the sum of one hundred dollars, and may commit the defendant to the county jail until the fine is paid, with costs.

Procedure
for complaint
and process.

3. Complaint against any person violating said resolution, or any section thereof, may be made before a district court of any city in such county, or in case there shall not be any district court in such county, then before

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any justice of the peace of such county, and such court or justice shall issue process at the suit of such county in the nature of a summons, and the same procedure shall be had thereunder as is prescribed in the act entitled "An act concerning townships (Revision of 1899)," for the violation of any ordinance of a township.

4. Such resolution before it shall take effect shall be published at least once a week for two weeks in two newspapers published and circulated in such county. Resolution advertised.

5. This act shall take effect immediately.

Approved April 16, 1907.

CHAPTER 182.

An act concerning streets and highways in townships.

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

1. The township committee of any township shall have power and authority by ordinance to lay out, open, widen, straighten, name, alter or vacate any street, avenue, road or highway, or any part or section of the same, and to take and appropriate for any of such purposes any lands and real estate, upon making compensation therefor in the manner now or hereafter provided by law for the taking of lands in townships for other public improvements, or by agreement with the owner. Securing land for streets in townships.

2. No ordinance exercising the powers given by this act shall be adopted until ten days' notice of the time and place fixed for its consideration shall have been given by publication for one insertion in a newspaper printed in the county and circulating in the township. Such notice shall state in general terms the object of the proposed ordinance and the property to be affected. Public notice of intention.

3. Whenever a petition for any such improvement shall have been presented to the township committee, signed by twenty-five owners of property to be benefited thereby, then the expenses thereof, including the compen- Assessment for benefits.

How made.

sation, if any, paid for lands so taken, may be assessed upon the property benefited in proportion to the benefits received, but not to exceed the benefits so received. Such assessment shall be made in the manner now or hereafter provided by law for assessing the benefits of any public improvements in townships, and shall include an assessment against every petitioner.

Act must be assented to.

4. This act shall take effect immediately, but its provisions shall not become operative in any township until assented to by a majority of the votes cast by the legal electors thereof at an election to be held in said township at any time to be fixed by the township committee thereof.

Petition.

No such election shall be called unless a petition for the same, signed by not less than one hundred taxpayers of said township, shall be filed with such township committee. The township clerk of said township shall cause public notice of the time and place of holding such election and the purpose thereof to be given by advertisements set up in at least five public places in said township and published for at least one insertion in one or more newspapers published in said county and circulating in said township, at least ten days previous to the date of such election. Said clerk shall provide for each elector voting at such election printed ballots, on which shall be either the words "for the adoption by this township of the provisions of an act to permit the township committee to lay out, open, widen, straighten, name, alter or vacate any street, avenue, road or highway, or any section of the same," or the words "against the adoption by this township of the provisions of an act to permit the township committee to lay out, open, widen, straighten, name, alter or vacate any street, avenue, road or highway, or any section of the same." The polls for such election shall be held at the usual places of holding elections therein, and shall be opened at one o'clock in the afternoon and close at seven o'clock in the evening, and such election shall be conducted by the proper election officers of said township for the time then being, and such officers shall return to the township committee of said township a true and correct statement, in writing, under their hands, of the result

Ballots.

Polls.

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of said election, which shall be entered at large upon the minutes of said body.

5. Nothing in this act shall give authority to any town-ship committee or other body to lay out, open, widen, straighten, name, alter or vacate any street, avenue, road or highway, or section of the same, in or through any portion of the grounds of any incorporated camp meeting association, nor to condemn any lands used for railroad purposes.

Limitations
to act.

Approved April 20, 1905.

INCREASED POWER TO BORROW.

An amendment to an act entitled "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, which supplement was approved April ninth, one thousand eight hundred and ninety-two.

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

1. The first section of an act entitled "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, which supplement was approved April ninth, one thousand eight hundred and ninety-two, be amended so as to read as follows:

Section be
amended.

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

1. In counties of the second class it shall be lawful to raise a sum not to exceed four hundred thousand dollars for which bonds may be issued by the board of chosen freeholders of any such county, under the act to which this is a supplement, or any supplement or amendment

Amount
authorized
to raise and
bonds issued.

Proviso. thereof; *provided, however*, that if work under said act and supplements or amendments has already been done to an amount exceeding said sum, bonds under said act and supplements may be issued to an amount sufficient to raise and pay for such work; *and provided also*, that no county road bond shall be issued to such an amount as, in addition to existing debt, shall raise the debt of the county for all purposes above three per centum of the assessed value of the real estate therein; and in case any such bonds shall be issued in excess of the limit aforesaid, all such bonds so issued in excess shall be void in the hands of any person or party, notwithstanding any recitals therein or any representations that may be made concerning the same; in case application has already been made to the circuit court and a certificate shall have been recorded and filed, as required by said act, such application need not be repeated in case of any subsequent issue of such bonds where the original certificate on file shows that the new issue of bonds will not exceed three per centum of the assessed value of the real estate in said county as limited by this act.

2. The second section of said act be amended so as to read as follows:

Board not to use money raised except to grade, &c. 2. In any county of the second class wherein the board of chosen freeholders thereof shall heretofore or may hereafter issue bonds under said act and supplements, that such board of such county shall not use any of the money so raised for any other purpose except to grade, macadamize or improve any road in any such county, under the provisions of the act to which this is a supplement and the several supplements and amendments thereof; *provided*, nothing herein shall prohibit the doing of the necessary repair of any road heretofore graded, macadamized or improved by any such board or that may be hereafter graded, macadamized or improved under said act and supplements.

Proviso.

3. All acts and parts of acts inconsistent herewith be and the same are, so far only as they conflict herewith, repealed, and that this act shall take effect immediately.

Approved March 24, 1897.

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CHAPTER 93.

POWER OF FREEHOLDERS TO BORROW.

A supplement to an act entitled "An act in relation to county expenditures," approved April second, one thousand eight hundred and seventy-eight.

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

1. In case of the injury or destruction by freshets or otherwise of any of the roads or sections of roads in this State that have become county roads under and by virtue of any law of this State whereby it shall be deemed necessary for the board of chosen freeholders, within the limits of whose county such roads or sections of roads so injured or destroyed may lie, to repair or rebuild the same, the said board of chosen freeholders may order and cause such roads or sections of roads to be repaired or rebuilt, notwithstanding the expense of repairing or rebuilding the same shall exceed the limit of the appropriations made for that year; and such board of chosen freeholders may borrow money on temporary loans for that purpose in anticipation of the next tax levy; and in the said tax levy there shall be incorporated a special appropriation under the head of "debts and interest, special deficiency," to pay for such temporary loans.

Repair of
roads dam-
aged by
freshets.

Special
charge.

2. This act shall take effect immediately.

Approved April 2, 1902.

CHAPTER 132.

An act to provide for the acquirement of turnpike roads for free public use, and for the permanent improvement and maintenance of the same.

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

Acquirement
of turnpike
road for free
public use.

1. Whenever there shall be presented to the State Commissioner of Public Roads a petition signed by the owners of at least two-thirds of the land and real estate fronting or bordering on any turnpike road, praying that said road may be acquired for free public use, and setting forth that they are willing that the peculiar benefits conferred on the lands fronting or bordering on said road shall be assessed thereon to an amount not exceeding ten per centum of the entire purchase price of the said road, together with the amount necessary to resurface, rebuild or improve the said road in the manner prescribed for other roads in the act entitled "An act to provide for the permanent improvement of the public roads in this State," approved March twenty-second, anno domini one thousand eight hundred and ninety-five, and the supplements thereto, said commissioner shall thereupon notify the Governor of such action, and the Governor shall thereupon appoint five commissioners from the county or counties through which the said road runs; the said commissioners, when appointed, shall take an oath or affirmation faithfully and fairly to perform their duties, and shall thereupon proceed to estimate and determine the fair and just value of the said road and of the portions thereof in each county in which the same is located, having given ten days' notice of the time and place when and where they will meet to hear any representation in behalf of the said corporation or of the board or boards of chosen freeholders of the various counties through which the said road runs, or of the applying freeholders in the said matter; said notice shall be served upon the president or other chief officer, of the turnpike company, upon the

Appointment
of commis-
sioners by
Governor.

Hearing.

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director of the said board or boards of chosen freeholders, and shall be published at least one week prior to the time of meeting in one newspaper published in each county through which said turnpike runs; such meeting shall be adjourned from time to time at the discretion of the said commissioners; when the said commissioners shall have arrived at a price or value of the said turnpike road satisfactory to themselves they shall report the same to the State Commissioner of Public Roads, who may thereupon ratify the same and report it to the board or boards of chosen freeholders of the counties through which the said road runs, which said board may thereupon purchase the same, or whenever the board of chosen freeholders of any county in this State shall agree with the owner or owners of any turnpike road or toll road within such county upon the price to be paid for such turnpike road or toll road, and shall, by resolution, accept the same, and said proceeding be approved by the State Commissioner of Public Roads in writing, said board may thereupon purchase the same and said road shall be paid for and maintained as a county road as hereinafter provided for; and they are hereby empowered to make temporary loans upon the credit of the said county or counties for the acquirement of the said roads as aforesaid.

Report to
State Com-
missioner of
Roads.

2. One-third of the cost of all roads so acquired, together with one-third of the amount expended in improving the same as aforesaid, which improvement shall be made in the manner prescribed for the roads under the aforesaid act, shall be paid for out of the state road appropriation; *provided*, that the amount so paid shall not in one year exceed the amount of forty thousand dollars. If one-third of such cost shall exceed the sum of forty thousand dollars, the said sum of forty thousand dollars shall be appropriated by the Governor and State Commissioner of Public Roads among the counties of this State in proportion to the cost of the roads acquired by them for such year, as shown by the statement of cost filed in the office of the State Commissioner of Public Roads. The Governor and the said commissioner shall, between December fifteenth and thirty-first in each year, certify

One-third
paid from
State appro-
priation.

Proviso.

to the State Comptroller the amount to be paid to each county for such year, and the State Comptroller shall thereupon draw his warrants in favor of the respective county collectors for the sums certified to as aforesaid upon the State Treasurer, who shall pay the same out of any moneys in the state treasury not otherwise appropriated; *provided further*, that the cost of all turnpike roads acquired under this act in any county in any one year, together with all roads built or repaired, shall not exceed one-half of one per centum of the ratables of such county for the last preceding year.

Proviso.

Duty of
county board
of assessors.

3. On or before August first in each and every year it shall be the duty of the board of chosen freeholders to certify to the county board of assessors, either in the annual tax budget or separately, the two-thirds of the cost of purchasing and improving of all turnpike roads acquired and improved as aforesaid during the year, and the county board of assessors shall include the sum so certified in the county tax assessed for such year, and the same shall be assessed, collected and paid over to the county in the same manner and within the same time that other county taxes are assessed, collected and paid over.

Loan to meet
deficiency.

If a deficiency shall exist in consequence of the receipt of less than one-third of the cost from the state treasury, the board of chosen freeholders shall have authority to borrow on temporary loans to the amount of such deficiency until the next annual taxes shall be assessed, collected and paid over to the county.

When turn-
pike in two
or more
counties.

4. If the said road shall run through more than one county, the petition to the State Commissioner of Public Roads shall be signed by at least two-thirds of the owners of the land and real estate bordering on said road in each county before the Governor shall be required to appoint the five commissioners mentioned in the first section of this act; and each of the said counties shall bear the expense of the acquirement of the said road in proportion to the value thereof within the said counties, and all proceedings after the appointment of the said five commissioners that may be required by virtue of this act shall be

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had separately and independently in each of the said counties.

5. Any road so acquired shall forever thereafter be a free county road, and shall be kept in good order and repair and in the same manner as are other county roads.

Maintenance.

6. When the said turnpike roads shall have been so acquired and improved by petition as aforesaid, the board of chosen freeholders shall apply to the Circuit Court of the county for the appointment of commissioners to estimate and to assess the peculiar benefits conferred by such acquirement and improvement upon the lands and real estate bordering on the road so acquired and improved, of the time and place of which application notices shall be given by ten days' publication in two daily newspapers printed and circulating within the said counties, or by four weeks' publication in two weekly newspapers printed and circulating therein, at which time and place, or such other time and place as the court shall designate, shall, without unnecessary delay, appoint three commissioners, who shall be freeholders and residents of the county in which the application is made, to assess the benefits aforesaid. The said court shall have power to remove any commissioner and appoint another in his place, and also fill any vacancy that may occur in the office of any commissioner at any time.

Assessment of benefits.

7. The said commissioners shall then proceed in like manner as the commissioners appointed to assess the benefits conferred by the improvement of the public roads of this State under and by virtue of an act of the Legislature, entitled "An act to provide for the permanent improvement of the public roads of this State," approved March twenty-second, one thousand eight hundred and ninety-five, and supplements thereto, and the report of the said commissioners when filed and approved shall be a lien upon the properties assessed in like manner, and the said assessment shall be collected in like manner as the assessment in the said act last before mentioned.

Manner of assessment.

Report a lien.

Approved March 22, 1901.

VACATION OF TURNPIKE.

SUPPLEMENT.

Deed of
cession and
transfer of
turnpike
road, how
executed
and filed.

Sec. 1. That whenever any turnpike company of this State shall execute to any city, township or other municipality of this State a deed of cession and transfer of all or any part of any turnpike road lying within the limits of any such city, township or other municipality, and shall have the same duly proven in the manner required for the proof of deeds or conveyances of lands, and shall deliver the same, together with a map or survey of the road, or of the part of road, so ceded and transferred to the common council, township committee or other governing board of such city, township or other municipality, and the said common council, township committee or other governing board shall accept the said deed of cession and transfer, by a writing indorsed thereon, the said deed, proof, map or survey and acceptance shall then be recorded in the office of the clerk of the county in which the road so ceded and transferred lies, in the book containing the records of public roads for said county, and after being so recorded shall be filed in the office of the Secretary of State; *provided*, that where the charter or act of incorporation of any city or other municipality prescribes the manner in which deeds of dedication of lands for public highways or streets shall be accepted, the proceedings for the acceptance of any deed of cession and transfer by a turnpike company as aforesaid shall, in any such city or other municipality, be the same as is required for the acceptance of a deed of dedication of lands for a public highway or street.

Proviso.

Company released from control, &c., of part of road ceded when deed is filed in office of Secretary of State.

Sec. 2. That any turnpike company making a cession and transfer of any part of their turnpike road in the manner aforesaid shall, from the date of filing the deed of cession and transfer in the office of the Secretary of State, be released and discharged from all authority and control over the part or parts of their road so ceded and transferred, and from all liability on account of the same,

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and the same shall thereafter be, to all intents and purposes, a public road or highway in such city, township or other municipality, and be subject to the same jurisdiction, authority and control by such city, township or other municipality as it has over other public roads or highways within the limits thereof.

Approved February 13, 1884.

An act authorizing turnpike companies to vacate or dispose of a portion of its road and property.

Sec. 1. That when any turnpike company in this State may deem it advisable to dispose or vacate any portion of their road, not in excess of one-half of its entire length, they shall hereby have the power and privilege of so doing at any time when the same may be favored by a vote represented by those owning two-thirds of the capital stock of said company, to be voted at a special meeting of said stockholders called by the officers of said company, and the notice of said meeting being published in at least one newspaper in each county where said road is located, for the space of thirty days, once in each week, said notice to state the time and object of said meeting. The said stockholders may, by a vote represented by those owning two-thirds of the capital stock of said company authorize and empower their president and secretary to sell or vacate to the freeholders of the county or counties the portion so desired; and if vacated without compensation, a committee of the board of freeholders of the county or counties may view the same and report to the said board upon what terms they have agreed to take said road, and the action of a majority of said board of freeholders in accepting or rejecting said report shall be final.

When turnpike company may vacate or dispose of portion of road.

Approved April 20, 1885.

SIXTEENTH ANNUAL REPORT.

An act to authorize turnpike companies to abandon a portion of their roads and property.

Turnpike companies may abandon portion of road.

Sec. 1. That any turnpike company in this State may abandon any portion of their road not exceeding two-thirds of the entire length of the road, when the same may be favored by a vote of those owning a majority of the capital stock of said company; the resolution to abandon a portion of said turnpike shall describe the part so abandoned, and shall be signed by the president and secretary of said turnpike company, duly acknowledged before an officer authorized to take the acknowledgment of deeds in this State, and shall thereupon be recorded in the office of the clerk of the county wherein such turnpike company is situated; *provided*, that the part of said turnpike so abandoned shall be in all respects in as good repair as when the said company began operating the same.

Passed June 1, 1886.

CHAPTER 63.

A supplement to an act entitled "An act to provide for the acquirement of turnpike roads for free public use," approved May eleventh, one thousand eight hundred and ninety-seven.

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

Compensation.

1. The pay of the commissioners heretofore or hereafter appointed under said act shall be a sum not exceeding five dollars per day, and necessary expenses not exceeding two dollars per day, for actual number of days employed in such service.

Settlement when road not accepted.

2. If the freeholders of the county or counties fail to accept the turnpike roads appraised under the act to which this is a supplement within twelve months after the commission have submitted their award to the State Road

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Commissioner, the bill of said commissioners, upon the approval of the State Road Commissioner and the signature of the Governor, shall be presented to the Comptroller of the State, who thereupon shall draw his warrant therefor upon the State Treasurer, who shall pay the same out of the annual state appropriation for roads.

3. This act shall take effect immediately.

Approved March 20, 1900.

CHAPTER 133.

A supplement to an act entitled "An act to provide for the acquirement of turnpike roads for free public use, and for the permanent improvement and maintenance of the same," approved March twenty-second, one thousand nine hundred and one.

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

1. When any commissioner heretofore or hereafter appointed under the act to which this act is a supplement shall die pending the proceedings under the said act to which this act is a supplement, or shall be disqualified or shall be unable to act or shall fail or refuse to act and perform the duties of his appointment, the other four commissioners appointed under said act shall proceed to perform the duties of their appointment with the same powers and effect as if all the commissioners were acting, and a report signed by the other four of said commissioners shall have the same force and effect as a report signed by all of the commissioners appointed under the said act, and a majority of said commissioners shall have the power to adjourn their meetings from time to time.

2. When any commissioner heretofore appointed under the act to which this act is a supplement shall have died pending the proceedings under the said act, or shall have been disqualified or unable to act or shall have failed or refused to act and to perform the duties of his appoint-

ment or to attend the meetings of the commissioners appointed under the said act, all the proceedings heretofore had and acts heretofore performed by the other four of the commissioners appointed under the said act are hereby confirmed and made valid, legal and effectual to the same extent that the same would have been valid, legal and effectual if all the commissioners appointed under the said act had taken part in all of said proceedings.

3. This act shall take effect immediately.

Approved March 28, 1904.

CHAPTER 138.

A further supplement to an act entitled "An act to provide for the control and operation of roads and bridges owned or claimed to be owned by any plank road company whose charter has expired or may expire," approved March twenty-second, one thousand nine hundred and one.

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

Widening
plank roads
acquired by
county.

1. After such road shall have been acquired and taken possession of by any board or boards of chosen freeholders of any county or counties in this State, such road may be widened to any width not exceeding one hundred feet, providing the board or boards of chosen freeholders of the county or counties in which said road may lie and be situate shall adopt a resolution determining that such widening is of public importance, and setting forth the width proposed and the location of said widening, and the points between which such widening is to be made; such resolution, in case said road lies in two or more counties, shall receive the approval of each of said counties before the same shall be valid and operative.

Acquirement
of lands.

2. The title to the lands required for such widening may be acquired by gift, devise, purchase or condemna-

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tion, and shall vest in the county corporation of the county or counties within the territorial limits of which the lands acquired may lie, respectively, and the cost and expense of acquiring such lands shall be paid by the county within which the same shall lie, but nothing in this act contained shall be construed to alter or in anywise affect the provisions of law under which such road, including the bridges thereof, are or shall be constructed, renewed, repaired or maintained.

3. This act shall take effect immediately.

Approved March 28, 1904.

CHAPTER 173.

An act to provide for the purchase, by boards of chosen freeholders, of turnpike or toll roads, or portions thereof, which have been improved by the construction thereon of a macadam, telford, rubble or other stone road, for free public use as county roads, and for the repair, improvement and maintenance of the same.

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 agree with the owner or owners of any turnpike or toll road, or portion thereof, lying within such county and being not less than one mile in length, which has been improved by the construction thereon of a macadam, telford, rubble or other stone road, upon the price to be paid for the same, and may by resolution agree to purchase the same for free public use at the price agreed upon, subject to the approval of the State Commissioner of Public Roads, and upon receiving the approval of said commissioner, in writing, the said board may thereupon purchase such turnpike or toll road, or portion thereof, at the price agreed upon, and the road or portion of road so purchased shall thereupon be and become a county road, and shall be cared for, repaired, improved and main-

Freeholders
may purchase
turnpike and
maintain
same as
county road.

tained for free public use in the same manner that other county roads are cared for, repaired, improved and maintained.

Require part
cost paid by
municipality.

2. The board of chosen freeholders may, before purchasing any such turnpike or toll road, or portion thereof, require as a condition of such purchase that each township or other municipality in which said road or any portion thereof intended to be purchased lies shall pay ten per centum of the cost of the part lying within such township or other municipality, said payment to be applied to the purchase price of the road or portion of road acquired under this act.

State's por-
tion.

Proviso.

Amount.

If deficiency.

3. One-third of the cost of any turnpike or toll road, or portion thereof purchased in accordance with the provisions of this act, shall be paid for out of the state road appropriation; *provided*, that the amount paid out of said appropriation for all turnpike or toll roads acquired pursuant to the provisions of this or any other act of the Legislature of this State now in force, shall not exceed in any year the sum of fifty thousand dollars. If one-third of the entire cost of the turnpike or toll roads so acquired in any year shall exceed the sum of fifty thousand dollars, the said sum of fifty thousand dollars shall be appropriated by the Governor and the State Commissioner of Public Roads first in payment of any deficiency remaining due from the State to any county or counties in any previous year, for one-third of the cost of turnpike or toll roads purchased as aforesaid, and afterwards among the several counties in proportion to the cost of the turnpike or toll roads acquired by each of them respectively during the current year pursuant to the provisions of this or any other act of the Legislature of this State now in force, as shown by the statements of cost filed in the office of the State Commissioner of Public Roads, the Governor and the said commissioner shall, between December fifteenth and thirty-first in each year, certify to the State Comptroller the amount to be paid to each county for such year for such deficiency, if any, and on account of the purchase of turnpike or toll roads, or portions thereof, in such county, and the State Comp-

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troller shall draw his warrant on the State Treasurer in favor of the county collector for the amount certified, and the State Treasurer shall thereupon pay the same; *provided further*, that the cost of all turnpike or toll roads or portions thereof acquired under this or any other act of the Legislature of this State now in force, by any county in any one year, together with all the roads built or repaired therein under the provisions of any act of the Legislature of this State providing for the permanent improvement of public roads in this State, shall not exceed one-half of one per centum of the ratables of such county for the last preceding year. Proviso.

4. On or before the day fixed for the meeting of the county board of assessors in any county in each year, the board of chosen freeholders of such county shall certify to the said county board of assessors, either in the annual tax budget or separately, two-thirds of the cost of any turnpike or toll road or portion thereof purchased or agreed to be purchased pursuant to the provisions of this act since the day fixed by law for the meeting of the board of assessors in the year next preceding. The county board of assessors shall include in their assessment of county taxes the sum so certified, and the same shall be collected and paid over to the county in the same manner and at the same time that other county taxes are collected and paid over. If a deficiency shall exist, in consequence of the receipt of less than one-third of the cost from the State, the said board of chosen freeholders shall have authority to borrow, on temporary loans, such deficiency, until such time as the same shall be paid by the State, as provided by section three of this act. Notice to county assessors.

5. Any board of chosen freeholders that shall enter into an agreement for the purchase of a turnpike or toll road or portion thereof, in accordance with the provisions of this act, shall, on or before making payment for the same, require the turnpike or toll road or portion thereof so purchased to be released and discharged from the lien of any mortgage given to secure a bonded or other indebtedness, and from any other lien or incumbrance whatsoever. Collection of assessment.

6. This act shall take effect immediately. If deficiency temporary loan.

Approved April 18, 1905. Turnpike acquired free of indebtedness.

CHAPTER 145.

An act to amend the title of and a supplement to an act entitled "An act to provide for the purchase, by boards of chosen freeholders, of turnpike or toll roads, or portions thereof, which have been improved by the construction thereon of a macadam, telford, rubble or other stone road, for free public use as county roads, and for the repair, improvement and maintenance of the same," approved April eighteenth, nineteen hundred and five.

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

Title amended to read.

1. The title of the act to which this is a supplement is hereby amended to read as follows, to wit:

An act to provide for the purchase or condemnation, by boards of chosen freeholders, of turnpike or toll roads, or portions thereof, which have been improved by the construction thereon of a macadam, telford, rubble or other stone road, for free public use as county roads, and for the repair, improvement and maintenance of the same.

Condemnation of turnpikes by counties.

2. Whenever the board of chosen freeholders of any county shall be unable to agree with the owner or owners of any turnpike or toll road, or portion thereof, lying within such county and being not less than one mile in length, which has been improved by the construction thereon of a macadam, telford, rubble or other stone road, upon the price to be paid for the same, and shall by resolution adjudge it to be advisable that the same should be acquired for free public use, notwithstanding such inability to agree upon a price for the same, it shall and may be lawful, and such board of chosen freeholders is hereby authorized and empowered, upon receiving the approval, in writing, of the State Commissioner of Public Roads, to condemn such turnpike or toll road, or portion thereof, lying within such county, in the manner provided by the act of the Legislature entitled "An act to regulate the

Action approved by road commissioner.

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ascertainment and payment of compensation for property condemned or taken for public use" (Revision of 1900), approved March twentieth, one thousand nine hundred, and the acts amendatory thereof and supplemental thereto.

3. Upon the filing of the report of the commissioners, and the approval, in writing, of the State Commissioner of Public Roads, such board of chosen freeholders is hereby empowered to borrow temporarily, upon the credit of the county, such sum or sums of money as shall be necessary to pay, in the first instance, the amount awarded by said commissioners, but one-third of the cost of any turnpike or toll road, or portion thereof, condemned in accordance with the provisions of this act shall be paid out of the state road appropriation, as provided by the act to which this is a supplement, in case of the purchase thereof.

Borrow money to make payment.

State's share one-third.

4. Any board of chosen freeholders may, before commencing such condemnation proceedings, require that each township or other municipality in which such turnpike or toll road, or portion thereof, lies shall agree to assume and pay ten per centum of the cost of the part or portion of such turnpike or toll road lying within such township or other municipality.

Liability of subdivisions of county.

5. Two-thirds of the cost of any turnpike or toll road, or portion thereof, condemned in accordance with the provisions of this act, less the sum or sums assumed and paid by any township or other municipality as herein provided, shall be certified to the county board of assessors, and assessed and collected in the manner provided by the fourth section of the act to which this is a supplement.

Collection of county's share by taxation.

6. This act shall take effect immediately.

Approved April 20, 1906.

SIXTEENTH ANNUAL REPORT.

CHAPTER 140.

A supplement to an act entitled "An act to authorize the improvement of county roads by the board of chosen freeholders of any county where such road has been a toll road and purchased or condemned, and such boards are charged with the repair and maintenance of the same, and to provide for the payment of the expense of such improvement," approved April fifteenth, one thousand nine hundred and eight.

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

Drainage
included in
road im-
provement.

1. The cost of grading and construction of necessary drains for the drainage of such road and carrying off of surface water shall be included as part of the cost of such permanent improvement.

2. This act shall take effect immediately.

Approved April 17, 1909.

CHAPTER 101.

An act authorizing and directing the board of chosen freeholders of the counties of this State to light with electric lights certain public highways, leading from the main shore and across the meadow to any seaside resort.

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

Freeholders
may light
certain
highways.

1. It shall be lawful for and the board of chosen freeholders of the counties of this State are hereby directed to light with electric lights any public highway, which has, or hereafter shall be constructed, in part by the State and which leads from the main shore and across the meadow to any seaside resort and which is over one mile

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in length and has two or more bridges constructed thereon; *provided, however*, that no contract for lighting shall be made for a longer period than five years, or without having first 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.

Passed April 15, 1909.

CHAPTER 102.

An act authorizing boards of chosen freeholders of counties of this State to issue and sell bonds for the purpose of providing funds for the acquisition of toll or turnpike roads by purchase or condemnation, and for resurfacing or otherwise improving such roads, and providing for the payment of the principal of and interest on said bonds.

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

1. The board of chosen freeholders of any county which has heretofore purchased or contracted to purchase, or may hereafter purchase or contract to purchase, any turnpike or toll road, or which has heretofore taken, or may hereafter take, proceedings to acquire any toll or turnpike road by condemnation, or which has heretofore entered into, or may hereafter enter into any contract for the resurfacing or otherwise improving of any turnpike or toll road so purchased or contracted to be purchased, or condemned, may provide for the raising of moneys deemed by such board necessary for any or all of said purposes by the issuance and sale of bonds of said county. Such bonds shall be payable in not more than thirty years from their date, shall bear interest at a rate not exceeding five per centum per annum, payable semi-annually, shall be of such form and denomination and

Bond issue to acquire and improve turnpikes.

Time.

Rate.

SIXTEENTH ANNUAL REPORT.

shall be executed by such officers as the said board shall determine, and shall be sold at not less than par, upon bids duly advertised for, and when so issued the full faith and credit of the county shall be pledged for the payment of the same.

Sinking
fund.

2. It shall be the duty of the board of chosen freeholders of any county issuing bonds under the authority of this act to establish a sinking fund for the payment of the principal thereof at maturity, and for that purpose to include in the annual appropriations each year, until the maturity of the bonds, a sum not less than two per centum of the par value of the bonds so issued, to be levied and collected with the other taxes of such county, and paid into such sinking fund; and said board of chosen freeholders shall also each year, until the maturity of said bonds, include in their annual appropriations, and cause to be levied and collected with the other taxes of the county, an amount sufficient to pay the interest on said bonds falling due in such year.

Principal
and interest
raised by
tax.

3. This act shall take effect immediately.

Approved April 15, 1909.

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VIADUCT.

CHAPTER 31.

An act to amend 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 municipalities, 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. Section two (2) of the act to which this is an amendment be and the same is hereby amended to read as follows:

Section amended.

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 or roads from either one or more ends of such viaduct, to connect with a street or streets, road or roads, of such county or municipalities; 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. If in the construction of such viaduct it becomes necessary to construct the elevated portion thereof through a portion of the length of any street or road of any municipality, it shall be lawful for said board to take and use such portion of such street or road for such elevated structure, and divert and

Lawful to construct connecting roads.

Use of street for elevated structure.

Care of diverted portion.

continue such street or road to and on either side of such elevated structure, and improve the portion so diverted and continued in the same manner that the said street or road was theretofore improved, and thereafter such portion of such street or road so diverted and continued shall become and be a road of the municipality, and under the care, custody and control thereof.

Section amended.

2. Section four (4) of the act to which this is an amendment be and the same is hereby amended to read as follows:

Freeholders may acquire lands.

4. If it shall become necessary to acquire lands for the building of such viaduct, or for the diversion and continuance of a street or road on either side of the elevated portion 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 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.

Section amended.

3. Section five (5) of the act to which this is an amendment be and the same is hereby amended to read as follows:

Total expenses allowable.

5. The total expense of viaducts contracted to be built under this act in any one year shall not exceed one-fourth 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-fourth of one per centum of the ratables as aforesaid.

Section amended.

4. Section six (6) of the act to which this is an amendment be and the same is hereby amended to read as follows:

May issue bonds.

6. If, in the opinion of the board of chosen freeholders of such county, to place the entire cost of such viaduct, including the acquisition of lands authorized hereunder and the improvement of any street or road diverted and continued as aforesaid, in the tax levy for any one fiscal

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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; time. rate not exceeding four 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 they mature, and shall likewise Sinking fund. 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; or the board, in its judgment, may, from time to time, place part of such cost in the tax levy year by year, and raise part only of said cost by the issue of the bonds aforesaid. If the board should at any time, or from time to time, pass a resolution or resolutions to place in the tax levy a certain sum to be used for the purposes authorized and mentioned in this act and the act amended hereby, such moneys shall be available forthwith, and the board may raise such sum Temporary loan bond. by the issue of temporary loan bond or bonds, to run not exceeding two years, and to bear interest not exceeding the rate of five per centum per annum, in anticipation of the collection of such taxes; and at the time of making How met. up the next tax budget of such county after the passage of such resolution or resolutions said board shall, pursuant to said resolution or resolutions, place therein a sum sufficient to pay off and discharge said temporary loan bond or bonds at maturity, with the interest thereon, as it accrues.

5. This act shall take effect immediately.

Approved April 9, 1907.

CHAPTER 201.

An act for the better protection of travelers, pedestrians, vehicles and animals on the public streets and highways.

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

Penalty for placing glass, bottles, &c., upon public highways.

1. Whoever places upon the surface of any public street, highway or other way customarily and lawfully used for public travel, or upon any sidewalk appurtenant to such way, any broken glass, bottle, metal, loose stones, earthenware, or other substance of a nature likely to cause injury to travelers or pedestrians, or to carriages, bicycles or other vehicles traveling or moving on said way, or which might wound, disable or injure any horse or other animal, or which might injure, cut or puncture any pneumatic tire, shall forfeit for each offense five dollars, to be sued for and recovered in an action of debt by any person who will sue for the same.

Broken stone of dimension one inch or more placed on highways to be covered.

2. Any overseer of the highways, committeeman, contractor, or other person whomsoever, who shall place or spread broken stone on any of the highways of this State, for the purpose of improving or repairing the same, shall, if such stone be of the dimension of an inch and one-half or more in diameter, cause the same to be covered with fine stone, earth or screenings, within such period of time as it shall be possible to obtain such fine stone, earth or screenings after said broken stones are spread upon said road, unless prevented by causes beyond his control, under a penalty of twenty dollars for each offense, to be sued for in an action of debt and recovered, with costs, by any person who shall be injuriously affected by the willful neglect or failure to cover said stone as herein provided.

3. This act shall take effect immediately.

Approved May 12, 1896.

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CHAPTER 98.

Further supplement to an act entitled "An act concerning roads," approved April sixteenth, one thousand eight hundred and forty-six.

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

1. The owner or occupant of land abutting on any highway in any township in this State shall, during the month of September of each year, cut and remove all brush, briars and weeds growing in or upon such portion of such highway as his or her lands abut upon, and in case such owner or occupant shall fail to perform the duty imposed hereby, the township committee of the township in which such lands abut as aforesaid shall cause such work to be done, and the owner of such lands shall pay the expense thereof, with costs, to be recovered in an action upon contract before any justice of the peace of the county at the suit of such township committee.

Highway
must be kept
clear of
weeds, &c.

2. This act shall take effect immediately.

Approved March 23, 1900.

LAYING OUT ROADS.

Receiving many inquiries how to proceed to lay out roads, change location, etc., to save correspondence we give the following quotations from the statutes:

Laying Out Roads by Freeholders After General Election.

It shall be lawful for the board of chosen freeholders of any of the several counties of this State, when said board deems it for the best interests of such county, to lay out, construct and maintain public roads extending

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through such county in any direction, to submit, by resolution, the question whether or not such public roads shall be laid out to the electors of said county, at an election to be held at the same time and place of holding the general election in and for said county for members of the General Assembly of this State, by the same officers, but in separate ballot-box, and if at such election a majority of the electors shall vote "against public roads," nothing in this act shall apply or be effective in said county; but if a majority of the electors vote "in favor of public roads," then the board shall proceed as directed by the act entitled "An act to authorize the board of chosen freeholders of any of the several counties of this State to lay out, open, construct, improve and maintain a public road therein," approved April 7th, 1888. P. L. 1888, page 397.

LAYING OUT, VACATING OR ALTERING PUBLIC ROADS BY
SURVEYORS OF HIGHWAYS. (Revised Statutes,
page 2828-119, Sec. 1.)

That when ten or more persons, being freeholders, shall think a public road necessary, or any public road which hath been or shall be laid out unnecessary, or any alteration in such road necessary in any part of the county in which they reside, it shall be lawful for the said persons to make application, in writing, to the Inferior Court of Common Pleas of the said county, in open court, having given previous notice for at least ten days of such intended application, and also of the day on which such application is intended to be made, by advertisements, under their hands, and set up at three of the most public places in the township in which the said road is proposed to be laid out, vacated or altered, and if there be more townships than one through which the said road may run, by advertisements, to be set up at three of the most public places in each township; and the said court, when applied to as aforesaid, on due proof being made that the advertisements have been set up according to law, on

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which the judgment of the court shall be final and conclusive, are hereby authorized and required to appoint six of the surveyors of the highways of the said county, ever having regard to the appointment of the surveyors of the highways of the township or townships where the said road shall be so applied for to be laid out, vacated or altered; *provided*, that no surveyor shall be appointed through whose land the road may run, or who for any other reason which the court in their discretion shall deem sufficient, think ought not to be appointed; and the said surveyors shall meet at such time and place as the said court shall direct, a copy of which appointment shall be served on each of the said surveyors at least six days prior to the time of their meeting; and two of the said applicants shall, at least twelve days prior to the said time, sign and set up advertisements at three of the most public places in the said township or townships, setting forth the time and place of the meeting of the surveyors agreeably to the directions of the court, and designating the points or places from and to which the said road is proposed to be laid out, vacated or altered. (See Secs. 138 and 168, *post*.)

VACATING AND RELAYING OF PUBLIC ROADS BY FILING
CONSENT WITH CLERK AND RECORDING.

138. Sec. 1. That whenever ten or more persons, being freeholders, shall think any alteration of any public road necessary in any part of the county wherein they reside, by having such road or a portion thereof vacated, and the same relaid or another road substituted therefor, they may make application in writing to the Inferior Court of Common Pleas of such county, or to one of the judges thereof, setting forth in writing the road or portion thereof as aforesaid which it is proposed to have vacated, describing the same by courses and distances, and also describing the road as it is to be relaid, or the road which is to be substituted therefor, to which description there shall be attached a map showing the location of the road or portion

of the road to be vacated and the road as relaid, or the road which is to be substituted therefor; and if within ten days after such application shall have been made as aforesaid, or if at the time of making such application there shall be presented to said court or judge the consent in writing of the owners of all the lands intersected by such old road or portion thereof proposed to be vacated, and of all the property intersected by the road as proposed to be relaid, or by the road which it is proposed to substitute therefor, and also the written consent of the township committee of the township wherein such road or roads do lie, that said application shall be granted, then it shall be lawful for said court or judge to cause said application, with the accompanying survey, map and return, and the written consents of the owners of lands as aforesaid, and of the township committee, to be filed with the clerk of the county, to be by him recorded in the book of roads for said county; and when said application and other papers shall have been so filed, such old road or portion thereof shall thereupon and thereby be deemed to be vacated, and the road as relaid, or the new road substituted therefor, shall thereupon and thereby be deemed and taken to be a public road.

VACATION OF PUBLIC ROADS BY CONSENT AND FILING
WITH COUNTY CLERK.

186. Sec. 1. That whenever ten or more persons, being freeholders, shall think the vacation of a part of any public road necessary in any part of the county wherein they reside, they may make application in writing to the Inferior Court of Common Pleas of such county or to one of the judges thereof, setting forth in writing the road or portion thereof which it is proposed to have vacated, describing the same by courses and distances, to which description there shall be attached a map showing the location of the road or portion thereof to be vacated, and if within ten days after such application shall have been

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made as aforesaid, or if at the time of making such application, there shall be presented to said court or judge the consent in writing of the owners of all the lands by such old road or portion thereof proposed to be vacated, and also the written consent of the township committee of the township wherein such lands do lie, that such application shall be granted, then it shall be lawful for said court or judge to cause said application, with the accompanying survey, map and return, and the written consents of the owners of lands as aforesaid, and of the township committee to be filed with the clerk of the county, to be by him recorded in the book of roads for said county, and when said application and papers have been so filed, such portion of such old road shall thereupon and thereby be deemed to be vacated; *provided*, that no portion of any old road proposed to be vacated under this act shall exceed one thousand yards in length.

CHAPTER 86.

An act to further amend an act entitled "An act to amend an act entitled 'A further supplement to an act entitled "An act concerning townships"'" (Revision of 1899), approved March twenty-fourth, one thousand eight hundred and ninety-nine, approved April ninth, one thousand nine hundred and two, which amendment was approved April twenty-first, one thousand nine hundred and six.

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

1. Section one of the act to which this is an amendment be and the same is hereby amended to read as follows:

1. The township committee shall have the power and authority by ordinance

(1) To accept any street, road, or public place when the same shall have been dedicated to the public use.

Section amended.

Committee may accept streets;

lay out, im-
prove, ac-
quire, &c.

Committee
may borrow
money.

(2) To lay out, open, widen, straighten, name, re-name, alter or vacate any street, avenue, road or highway; or any section of the same, whenever it shall deem it necessary, and to take and appropriate for any such purpose any lands and real estate upon making compensation to the owner or owners thereof at a price agreed upon; and whenever the Township Committee and the owner of any lands shall agree upon a price for the purchase thereof, then the Township Committee may borrow, in anticipation of the collecting of the assessments and taxes for any said improvement, such sum of money as may be necessary to pay such purchase price, giving therefor obligations or improvement certificates, in the name of the township, payable at any time within five years from their date, signed by the chairman of the Township Committee, attested by the township clerk; and, in case the Township Committee cannot agree with the owner or owners of the lands and real estate necessary for any such purposes, then the same may be acquired by the payment of damages, as hereinafter mentioned and provided.

Repealer.

2. All acts and parts of acts inconsistent with this act are hereby repealed and this act shall take effect immediately.

Approved April 13, 1909.

CHAPTER 216.

Supplement to an act entitled "An act concerning roads" (Revision), approved March twenty-seventh, one thousand eight hundred and seventy-four.

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

All vehicles
drawn by
animals
must display
light at
night.

1. Every vehicle drawn by horse, horses or other beasts shall carry, during the period from one hour after sunset to one hour before sunrise, at least one lighted lamp, showing a light visible at least two hundred and fifty feet.

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Said light shall be so displayed that it may be seen, either in the direction toward which or from which the vehicle is proceeding; and if any person shall offend against this provision, such person shall forfeit and pay the sum of one dollar for the use of the township, to be sued for and recovered by any person who shall sue for the same.

2. This act shall not be construed to affect in any way legislation regarding motor vehicle lights. Motor vehicle law not affected.

Approved April 20, 1909.

CHAPTER 235.

An act to amend 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.

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

1. Section thirty-seven of the act of which this act is amendatory be and the same is hereby amended to read as follows: Section 37 amended.

37. Moneys received in accordance with the provisions of this act, whether from fines, penalties, registration fees, license fees, or otherwise, shall be accounted for and forwarded to the Commissioner of Motor Vehicles and by him paid over to the Treasurer of the State of New Jersey, to be used by the Commissioner of Public Roads, as a fund for the repair of such improved roads throughout the State as said Commissioner shall designate, regard being had to the repair of the most important improved roads, and the distribution of the benefits of this All receipts to be used for road repairs.

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act throughout the several counties of this State, said fund to be available annually on and after the first day of July in each year; *provided, however*, that there shall first be deducted from the moneys as aforesaid received the amount appropriated by the Legislature in any annual or supplemental bill for the maintenance of said Department of Motor Vehicles, which said sum so deducted shall become a part of the general State fund.

2. This act shall take effect immediately.

Approved April 21, 1909.

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	"	"	1,312 $\frac{1}{2}$	"	"	"
"	8	"	"	8	"	"	1,750	"	"	"
"	8	"	"	10	"	"	2,187 $\frac{1}{2}$	"	"	"
"	8	"	"	12	"	"	2,625	"	"	"
"	9	"	"	4	"	"	984 $\frac{3}{8}$	"	"	"
"	9	"	"	6	"	"	1,476 $\frac{9}{16}$	"	"	"
"	9	"	"	8	"	"	1,968 $\frac{1}{4}$	"	"	"
"	9	"	"	10	"	"	2,460 $\frac{15}{16}$	"	"	"
"	9	"	"	12	"	"	2,953 $\frac{1}{8}$	"	"	"
"	10	"	"	4	"	"	1,093 $\frac{1}{4}$	"	"	"
"	10	"	"	6	"	"	1,640 $\frac{5}{8}$	"	"	"
"	10	"	"	8	"	"	2,187 $\frac{1}{2}$	"	"	"
"	10	"	"	10	"	"	2,734 $\frac{3}{8}$	"	"	"
"	10	"	"	12	"	"	3,281 $\frac{1}{4}$	"	"	"

A road 11 feet wide and 4 inches deep will require 1,203 $\frac{1}{8}$ tons of stone per mile.

"	11	"	"	6	"	"	1,804 $\frac{11}{16}$	"	"	"
"	11	"	"	8	"	"	2,406 $\frac{1}{4}$	"	"	"
"	11	"	"	10	"	"	3,007 $\frac{13}{16}$	"	"	"
"	11	"	"	12	"	"	3,609 $\frac{3}{8}$	"	"	"
"	12	"	"	4	"	"	1,312 $\frac{1}{2}$	"	"	"
"	12	"	"	6	"	"	1,968 $\frac{1}{4}$	"	"	"
"	12	"	"	8	"	"	2,625	"	"	"
"	12	"	"	10	"	"	3,281 $\frac{1}{4}$	"	"	"
"	12	"	"	12	"	"	3,937 $\frac{1}{2}$	"	"	"
"	13	"	"	4	"	"	1,421 $\frac{7}{8}$	"	"	"
"	13	"	"	6	"	"	2,132 $\frac{13}{10}$	"	"	"
"	13	"	"	8	"	"	2,843 $\frac{3}{4}$	"	"	"
"	13	"	"	10	"	"	3,554 $\frac{11}{10}$	"	"	"
"	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 $\frac{1}{8}$	"	"	"
"	14	"	"	12	"	"	4,593 $\frac{3}{4}$	"	"	"
"	15	"	"	4	"	"	1,640 $\frac{5}{8}$	"	"	"
"	15	"	"	6	"	"	2,460 $\frac{15}{10}$	"	"	"
"	15	"	"	8	"	"	3,281 $\frac{1}{4}$	"	"	"
"	15	"	"	10	"	"	4,101 $\frac{9}{10}$	"	"	"
"	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 $\frac{1}{10}$	"	"	"
"	17	"	"	8	"	"	3,718 $\frac{3}{4}$	"	"	"
"	17	"	"	10	"	"	4,648 $\frac{7}{10}$	"	"	"
"	17	"	"	12	"	"	5,578 $\frac{1}{8}$	"	"	"
"	18	"	"	4	"	"	1,968 $\frac{3}{4}$	"	"	"
"	18	"	"	6	"	"	2,953 $\frac{1}{8}$	"	"	"
"	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 $\frac{1}{8}$	"	"	"
"	19	"	"	6	"	"	3,117 $\frac{3}{10}$	"	"	"
"	19	"	"	8	"	"	4,156 $\frac{1}{4}$	"	"	"
"	19	"	"	10	"	"	5,195 $\frac{5}{10}$	"	"	"
"	19	"	"	12	"	"	6,234 $\frac{3}{8}$	"	"	"

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A road 20 feet wide and 4 inches deep will require	2,187½	tons of stone per mile.
" 20 " " 6 "	3,281½	" " "
" 20 " " 8 "	4,375	" " "
" 20 " " 10 "	5,468½	" " "
" 20 " " 12 "	6,562½	" " "

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 4,693⅓ 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.

SQUARE YARDS IN ONE MILE OF

8 feet in width.....	4,693⅓ square yards.
10 "	5,866⅔ "
12 "	7,040 "
14 "	8,213⅓ "
16 "	9,386⅔ "
18 "	10,560 "

8 feet wide, or	4,693⅓ square yards, at	25c. per sq. yd.....	\$1,173 33⅓
10 "	5,866⅔ "	25c. "	1,466 66⅔
12 "	7,040 "	25c. "	1,760 00
14 "	8,213⅓ "	25c. "	2,053 33⅓
16 "	9,386⅔ "	25c. "	2,346 66⅔
18 "	10,560 "	25c. "	2,640 00

8 "	4,693⅓ "	30c. "	1,408 00
10 "	5,866⅔ "	30c. "	1,760 00
12 "	7,040 "	30c. "	2,112 00
14 "	8,213⅓ "	30c. "	2,464 00
16 "	9,386⅔ "	30c. "	2,816 00
18 "	10,560 "	30c. "	3,168 00

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8 feet wide, or	4,693 $\frac{1}{2}$	square yards, at 35c. per sq. yd.....	\$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 $\frac{1}{2}$	" 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 $\frac{1}{2}$	" 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 $\frac{1}{2}$	" 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 $\frac{1}{2}$	" 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 $\frac{1}{2}$	" 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
8 "	4,693 $\frac{1}{2}$	" 65c. "	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 $\frac{1}{2}$	" 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

COMMISSIONER OF PUBLIC ROADS.

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8 feet wide, or	4,693 $\frac{1}{2}$	square yards, at	70c. per sq. yd.		\$3,285 33 $\frac{1}{2}$
10	"	5,866 $\frac{2}{3}$	"	70c.	" 4,106 66 $\frac{2}{3}$
12	"	7,040	"	70c.	" 4,928 00
14	"	8,213 $\frac{1}{2}$	"	70c.	" 5,749 33 $\frac{1}{2}$
16	"	9,386 $\frac{2}{3}$	"	70c.	" 6,570 66 $\frac{2}{3}$
18	"	10,560	"	70c.	" 7,392 00
8	"	4,693 $\frac{1}{2}$	"	75c.	" 3,520 00
10	"	5,866 $\frac{2}{3}$	"	75c.	" 4,400 00
12	"	7,040	"	75c.	" 5,280 00
14	"	8,213 $\frac{1}{2}$	"	75c.	" 6,160 00
16	"	9,386 $\frac{2}{3}$	"	75c.	" 7,040 00
18	"	10,560	"	75c.	" 7,920 00
8	"	4,693 $\frac{1}{2}$	"	80c.	" 3,754 66 $\frac{2}{3}$
10	"	5,866 $\frac{2}{3}$	"	80c.	" 4,693 33 $\frac{1}{2}$
12	"	7,040	"	80c.	" 5,632 00
14	"	8,213 $\frac{1}{2}$	"	80c.	" 6,570 66 $\frac{2}{3}$
16	"	9,386 $\frac{2}{3}$	"	80c.	" 7,509 33 $\frac{1}{2}$
18	"	10,560	"	80c.	" 8,448 00
8	"	4,693 $\frac{1}{2}$	"	85c.	" 3,989 33 $\frac{1}{2}$
10	"	5,866 $\frac{2}{3}$	"	85c.	" 4,986 66 $\frac{2}{3}$
12	"	7,040	"	85c.	" 5,984 00
14	"	8,213 $\frac{1}{2}$	"	85c.	" 6,981 33 $\frac{1}{2}$
16	"	9,386 $\frac{2}{3}$	"	85c.	" 7,978 66 $\frac{2}{3}$
18	"	10,560	"	85c.	" 8,976 00
8	"	4,693 $\frac{1}{2}$	"	90c.	" 4,224 00
10	"	5,866 $\frac{2}{3}$	"	90c.	" 5,280 00
12	"	7,040	"	90c.	" 6,336 00
14	"	8,213 $\frac{1}{2}$	"	90c.	" 7,392 00
16	"	9,386 $\frac{2}{3}$	"	90c.	" 8,448 00
18	"	10,560	"	90c.	" 9,504 00
8	"	4,693 $\frac{1}{2}$	"	95c.	" 4,458 66 $\frac{2}{3}$
10	"	5,866 $\frac{2}{3}$	"	95c.	" 5,573 33 $\frac{1}{2}$
12	"	7,040	"	95c.	" 6,688 00
14	"	8,213 $\frac{1}{2}$	"	95c.	" 7,802 66 $\frac{2}{3}$
16	"	9,386 $\frac{2}{3}$	"	95c.	" 8,917 33 $\frac{1}{2}$
18	"	10,560	"	95c.	" 10,032 00
8	"	4,693 $\frac{1}{2}$	"	\$1.00	" 4,693 33 $\frac{1}{2}$
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 $\frac{1}{2}$	"	1.00	" 8,213 33 $\frac{1}{2}$
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 $\frac{1}{2}$	782 $\frac{2}{3}$	880	977 $\frac{1}{2}$	1,075 $\frac{1}{2}$	1,173 $\frac{1}{2}$
One mile.....	7 feet wide.....	684 $\frac{1}{2}$	798 $\frac{1}{2}$	912 $\frac{1}{2}$	1,026 $\frac{2}{3}$	1,140 $\frac{1}{2}$	1,254 $\frac{1}{2}$	1,368 $\frac{1}{2}$
One mile.....	8 feet wide.....	782 $\frac{2}{3}$	912 $\frac{1}{2}$	1,042 $\frac{2}{3}$	1,173 $\frac{1}{2}$	1,303 $\frac{1}{2}$	1,434 $\frac{1}{2}$	1,564 $\frac{1}{2}$
One mile.....	9 feet wide.....	880	1,026 $\frac{2}{3}$	1,173 $\frac{1}{2}$	1,320	1,466 $\frac{2}{3}$	1,613 $\frac{1}{2}$	1,760
One mile.....	10 feet wide.....	977 $\frac{1}{2}$	1,140 $\frac{1}{2}$	1,303 $\frac{1}{2}$	1,466 $\frac{2}{3}$	1,629 $\frac{1}{2}$	1,792 $\frac{1}{2}$	1,955 $\frac{1}{2}$
One mile.....	11 feet wide.....	1,075 $\frac{1}{2}$	1,254 $\frac{1}{2}$	1,434 $\frac{1}{2}$	1,613 $\frac{1}{2}$	1,792 $\frac{1}{2}$	1,971 $\frac{1}{2}$	2,151 $\frac{1}{2}$
One mile.....	12 feet wide.....	1,173 $\frac{1}{2}$	1,368 $\frac{1}{2}$	1,564 $\frac{1}{2}$	1,760	1,955 $\frac{1}{2}$	2,151 $\frac{1}{2}$	2,346 $\frac{1}{2}$
One mile.....	13 feet wide.....	1,271 $\frac{1}{2}$	1,482 $\frac{1}{2}$	1,694 $\frac{1}{2}$	1,906 $\frac{1}{2}$	2,118 $\frac{1}{2}$	2,330 $\frac{1}{2}$	2,542 $\frac{1}{2}$
One mile.....	14 feet wide.....	1,368 $\frac{1}{2}$	1,597 $\frac{1}{2}$	1,825 $\frac{1}{2}$	2,053 $\frac{1}{2}$	2,281 $\frac{1}{2}$	2,509 $\frac{1}{2}$	2,737 $\frac{1}{2}$
One mile.....	15 feet wide.....	1,466 $\frac{2}{3}$	1,711 $\frac{1}{2}$	1,955 $\frac{1}{2}$	2,200	2,444 $\frac{1}{2}$	2,688 $\frac{1}{2}$	2,933 $\frac{1}{2}$
One mile.....	16 feet wide.....	1,564 $\frac{1}{2}$	1,825 $\frac{1}{2}$	2,085 $\frac{1}{2}$	2,346 $\frac{2}{3}$	2,607 $\frac{1}{2}$	2,868 $\frac{1}{2}$	3,128 $\frac{1}{2}$
One mile.....	17 feet wide.....	1,632 $\frac{1}{2}$	1,919 $\frac{1}{2}$	2,216 $\frac{1}{2}$	2,493 $\frac{1}{2}$	2,770 $\frac{1}{2}$	3,047 $\frac{1}{2}$	3,324 $\frac{1}{2}$
One mile.....	18 feet wide.....	1,760	2,053 $\frac{1}{2}$	2,346 $\frac{2}{3}$	2,640	2,933 $\frac{1}{2}$	3,226 $\frac{1}{2}$	3,520
One mile.....	19 feet wide.....	1,857 $\frac{1}{2}$	2,167 $\frac{1}{2}$	2,477 $\frac{1}{2}$	2,786 $\frac{2}{3}$	3,096 $\frac{1}{2}$	3,405 $\frac{1}{2}$	3,715 $\frac{1}{2}$
One mile.....	20 feet wide.....	1,955 $\frac{1}{2}$	2,281 $\frac{1}{2}$	2,607 $\frac{1}{2}$	2,933 $\frac{1}{2}$	3,259 $\frac{1}{2}$	3,585 $\frac{1}{2}$	3,911 $\frac{1}{2}$

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NEW JERSEY STATE LIBRARY

ROAD MAP OF THE STATE OF NEW JERSEY

From original surveys of the N.J. Geological Survey
based on the triangulation of the U. S. Coast and Geodetic Survey

Scale: 1 inch to 40 miles

PUBLISHED BY THE STATE OF NEW JERSEY
DEPARTMENT OF TRANSPORTATION

Legend

The State and these different counties will be
shown in different colors. The colors of the
various counties will be as follows: Adams
County, light blue; Bergen County, light green;
Burlington County, light yellow; Camden County,
light pink; Cape May County, light orange;
Cumberland County, light purple; Essex County,
light brown; Gloucester County, light gray;
Hudson County, light blue; Mercer County,
light green; Monmouth County, light yellow;
Morris County, light pink; Ocean County,
light orange; Passaic County, light purple;
Pike County, light brown; Salem County,
light gray; Sussex County, light blue;
Union County, light green; Warren County,
light yellow; and Woodbury County, light pink.

